A COMPARISON OF TWO METHODS OF FAMILIARIZING STUDENTS WITH LIBRARY METHODS AND MATERIALS

By

THOMAS JAMES MOFFETT

A DISSERTATION PRESENTED TO THE GRADUATE COUNCIL OF
THE UNIVERSITY OF FLORIDA
IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE
DEGREE OF DOCTOR OF EDUCATION

UNIVERSITY OF FLORIDA

August, 1965

ACKNOWLEDGMENTS

The writer wishes to express his deep appreciation:

To Douglas E. Scates, under whose capable and friendly guidance this dissertation was prepared

To Kenneth A. Christiansen, who made it possible both to learn the trade and to reap the benefits

To Margaret Knox Goggin, author of and television instructor of the series, for guidance in writing about materials of the library

To his wife, for patience and understanding, and the many repetitious efforts to gain quality typewritten copy.

TABLE OF CONTENTS

Page

ACKNOWLEDGMENTS ii

LIST OF TABLES iv

CHAPTER

I. INTRODUCTION 1

II. LITERATURE AND RESEARCH ON USES OF EDUCATIONAL TELEVISION 10

III. PRESENTATION AND ANALYSIS OF THE DATA 26

IV. DEVELOPMENT OF THE COURSE, LY 201--USING BOOKS AND LIBRARIES 54

V. CERTAIN CONSIDERATIONS OF RECENT THEORY WHICH RELATE TO THE DEVELOPMENT OF THE COURSE, LY 201 71

VI. CONCLUSIONS AND RECOMMENDATIONS 89

APPENDIX 93

BIBLIOGRAPHY 95

LIST OF TABLES

TABLE Page

1. SCHEDULE OF MEETING DATES AND SUBJECTS, LY 201, Fall 1964 . . 6
2. CLASSIFICATION OF STUDENTS TAKING LY 201, BY SCHOOL OR COLLEGE AND YEAR 27
3. STUDENTS WHO TOOK PREREQUISITE COURSE, C-3--READING, SPEAKING, AND WRITING 28
4. STUDENTS WHO HAVE PREVIOUSLY TAKEN COURSES BY TELEVISION . . 29
5. COLLEGE OR UNIVERSITY GRADE-POINT AVERAGES: STUDENTS IN LY 201 29
6. FREQUENCY WITH WHICH ITEMS WERE MISSED: TEST ON SOCIAL SCIENCES I 31
7. RESULTS FOR THE TEST ON SOCIAL SCIENCES I LECTURE 32
8. FREQUENCY WITH WHICH TEST ITEMS WERE MISSED ON PRETEST AND POSTTEST FOR HUMANITIES LECTURE 34
9. DISTRIBUTION OF SCORES ON PRETEST AND POSTTEST FOR HUMANITIES LECTURE 35
10. GAINS OR LOSSES OF INDIVIDUAL STUDENTS FROM PRETEST TO POSTTEST ON HUMANITIES. 36
11. DISTRIBUTION OF TEACHER-ASSIGNED SCORES ON WORK FOR THE COURSE, LY 201 39
12. DISTRIBUTION OF DIFFERENCES BETWEEN WEIGHTED AND UNWEIGHTED COURSE SCORES FOR STUDENTS IN THE TELEVISION SECTION . . . 47
13. ILLUSTRATION OF TWO PROCESSES IN ARRIVING AT WEIGHTED SCORES FOR THE COURSE 50

CHAPTER I

INTRODUCTION

In recent years enrollments at the University of Florida have increased faster than classrooms or staff could be added. Freshmen arriving at the University are often forced to meet in large lecture sections, held in auditoriums or halls where the lecturer and the students are separated by considerable distances. The use of public address amplifiers and mechanical devices to reinforce the auditory and visual impact of the speaker has become common. Naturally, the effectiveness of teaching these large groups has come under question. It is against this background that the present study was undertaken.

One of the courses regularly taken by freshmen is C-3--Reading, Speaking, and Writing: Freshman English. It is popularly known as "C-3." In a portion of this course, students are introduced to the rudiments of library utilization. Each student first makes an exploratory visit to the library to become acquainted with the major areas, and to learn who, in each area, is available to assist him. Next, he studies the use of the Readers' Guide to Periodical Literature, the card catalog, and the serials catalog. Two encyclopedias and the location of several biographical works are studied during the third supervised visit. This work leads to the writing of a paper, as the fourth assignment, based on the library materials which have been studied. The entire structure of this sequence is but a small part of the whole course--four lessons out of forty-two.

A second course, devoted entirely to the use of library materials, is available. It is a sophomore level course, meeting one hour each week for lectures, with exercises to be worked out in the library. The course, LY 201--Using Books and Libraries, is available to most students as an elective, and carries one hour of academic credit. Students in the School of Journalism and Communications, and some second-year transfer students, are required to take this course. Additionally, some students needing to improve their study habits, who have been placed on academic probation, have been required to take the course.

The rapid growth in the number of students enrolled in the University has been paralleled by increased enrollments in this library course. The library has experienced increasing difficulty in providing sufficient teaching personnel for the expanding number of sections needed.

Along with increased enrollments in the library course has come the problem of making library materials available for classroom utilization. In order to permit students to see the materials being discussed, overhead projectors, slide projectors, and large charts were employed. In some cases, it was not possible to darken the room sufficiently to permit the projected materials to be seen well. In other cases, the task of preparing the projected materials became too burdensome for the librarian serving also as instructor.

Because of this less-than-satisfactory situation, a decision was made to experiment with closed-circuit television as a means of improving the visual presentation and relieving some of the pressures on the staff. The use of television was thought also to provide a means of reintroducing the closer relationship between the lecturer and the student which had been lost in the large-group lecture sections. This closer relationship in television is possible, in part, through what is known as "eye contact," which occurs when the eyes of the lecturer and the eyes of the student meet. The result is that a viewer has the feeling of being addressed personally. Other steps in the direction of personalizing the presentation were taken, as will be described later.

The library staff decided that the use of televised lectures would give the students in LY 201 a greater familiarity with the materials being discussed if the students could see enlarged close-ups of material. It was felt that materials in the television lectures might be presented in such a way as to permit the students actually to read pages as they were presented. Because of increased convenience and economy of time, television might also permit the inclusion of a larger number of reference works, with perhaps even more materials from each.

In the conventional method of lecturing it is not possible to bring whole sets of major works to class, nor is it possible for all students to be looking closely at any one volume while it is being discussed. With the use of televised lectures the attention of every student can be directed to the same material at the same time. Through the use of close-up photography the students as a group and as individuals can see the materials in readable size.

The establishment of an educational television complex at the University also was a factor in the decision to use televised lectures. Television studios and closed-circuit lines were developed as a part of the School of Journalism and Communications in order to permit the making and showing of lectures required by that school and by other departments of the University. Thus, facilities were in existence for the production and utilization of a televised course in library methods. Accordingly, planning for the televised lectures began. These plans, and their development, will be discussed in a later chapter.

Purpose of the Study

The purpose of this study was to assemble, compare, and analyze data bearing on two methods of teaching the course, LY 201, and to use these data as a basis for the partial evaluation of the relative effectiveness of the two methods. One of these methods consisted of lectures delivered by a librarian in person to a large group of students who met in a lecture hall. The period was not formally divided into parts; the entire 50-minute period was devoted to the lecture with questions and discussion being permitted throughout the period. Mimeographed sheets with brief notes about each kind of material being discussed were given to the students by an assistant. Each student was also given an assignment to be worked out in the library. This group will be referred to throughout the study as the "conventional section."

The other section was taught using 30-minute televised illustrated lectures, preceded by 20 minutes of "live" introduction by the lecturer who came in person to the large-group meeting room. The same mimeographed materials and the same library exercises as were used in the conventional section were passed out to the students. Following the TV presentation, there was a 5-minute question-and-answer period allowing for clarification of the lecture and the assigned library exercises. This group will, throughout the present report, be referred to as the "television section."

Organization and Scheduling of the Sections

At the time of registration, students were not told that one section would be taught by television and the other by conventional methods. Students were free to select the section which, on the basis of the day and hour, best fitted with their other course schedule. There was no attempt to assign or to persuade students into either section. The end-of-course rolls recorded 66 students in the conventional section and 98 in the television section.

The conventional section met on Tuesdays at 11:00 AM, in a room having a seating capacity of 75. All seats were on the same level. There was a table at the front of the room where books and other materials could be displayed. The television section met at 8:40 AM, on Thursdays in a somewhat larger room, having elevated tiers of seats. Two television receiving sets were placed at the front of the room and three other sets were positioned along each side of the room, suspended from the ceiling, making a total of eight receivers. No student was farther than 15 feet from the nearest receiver. Sound as well as picture was produced at each set. During the discussion periods the instructor could be seen and heard well whether standing at the front of the room on the platform or at floor level.

The course consisted of 15 class meetings, four of which were devoted to testing. (These tests contributed a major portion of the data on which the present study was based.) After allowing one meeting for introduction and one for review at the end of the course, there were nine meetings left in which library resources in seven different areas of learning were presented. The schedule called for the alternation of these seven areas between the two lecturers in order to prevent a conflict in the use of library materials.

The conventional section was able to follow the program as planned. In the case of the television section, however, certain modifications were necessitated by practical conditions which were encountered during the progress of the course. The first meeting had to be cancelled on account of closure of the University when Hurricane Dora passed through the Gainesville Area. The twelfth meeting was eliminated by the closing of the University for a holiday. What would have been the final class meeting was cut out because the period reserved for final examinations included that day. The list of subjects and the schedule of class meetings actually followed by each section are shown in Table 1.

TABLE 1.--SCHEDULE OF MEETING DATES AND SUBJECTS, LY 201, FALL 1964

Date	Conventional Section (Tuesday, 11:00 AM)	Date	Television Section (Thursday, 8:40 AM)
Sept. 8	Introduction	Sept. 10	------[a]
15	Book Reviews	17	Introduction
22	Bibliography	24	Biography
29	Biography	Oct. 1	Book Reviews
Oct. 6	Quiz-1 (30 min)	8	Bibliography
13	Humanities I	15	Quiz-1; Social Sciences I[b]
20	Humanities II	22	Social Sciences II
27	Midterm Examination	29	Midterm Examination
Nov. 3	Social Sciences I	Nov. 5	Humanities I
10	Social Sciences II	12	Humanities II
17	Quiz-2 (30 min)	19	Quiz-2; Sciences I & II[b]
24	Guides to Literature	26	------[c]
Dec. 1	Sciences I & II	Dec. 3	Guides to Literature
8	Summary	10	------[c]
17	Final Examination	17	Final Examination

[a] Emergency closing of University; Hurricane Dora.

[b] Quiz and lecture crowded into single period.

[c] No classes held; Thanksgiving recess; final examination period.

The tightness of schedules made it impossible for the television section to make up for the lost days. These students therefore had three class meetings fewer than the students in the conventional section. The final summary review was denied the students in the television section, and the lectures on two subject areas were crowded into the same periods with quizzes. While there is no way in the design of the research to compensate for this difference in amount of class time, nevertheless, if the television students were able to demonstrate, on the identical tests, as much learning as the other students with the three additional days of instruction, then the television instruction had even more surely proved its effectiveness.

How the Data Were Gathered

The quizzes and examinations used in the four class meetings, as listed in Table 1, were mimeographed and given to both sections. These quizzes and examinations were developed by the librarians from materials which had previously been used with success. The scores and teacher grades on these tests were recorded by the present writer on individual data cards which served to bring together all the information gathered on each individual student.

In addition to test scores, the library exercises handed in each week by each student were graded and recorded on the individual student's data card. These library exercises also carried a report by the student of the time he spent in working out the exercise.

The student's final score, and final grade, as given by the instructors, also became a part of the student's individual record.

In addition to all of these regular instructional records, two tests were made especially for analysis in connection with the present research. One of these, the special test for Social Sciences, was given at the end of the respective lectures on Social Science I as a measure of the relative effectiveness of the two methods of presentation on the basis of the assumption (shown in Chapter III to be true) that the two groups of students were generally of equal background and ability.

In order to make the same kind of comparison without involving the assumption of equality of the two groups through random selection from the same population, a special test was prepared for the lectures on Humanities to be given both as a pretest and posttest to the lectures on Humanities II. Any significant difference in the measured gains can thus be ascribed to the relative effectiveness of the two modes of presentation.

In addition to all these forms of measurement, certain personal data were obtained directly from the students both at the beginning and at the end of the course. This material will be presented and analyzed in Chapter III.

Delimitation

This study was limited to students at the University of Florida, enrolled in the course, LY 201--*Using Books and Libraries*, during the fall trimester of 1964. Evaluation of the course outcomes was based on the kinds of evidence described in the preceding section.

Hypothesis

It is hypothesized that, in the teaching of the course, LY 201, televised lectures can be employed without reduction in learning or understanding by the student. If this be so, it will be possible for a limited library staff to reach an increasingly larger number of students without sacrifice in quality of work. The expectation is that the resulting economy of instructor time can be realized without loss of effectiveness of presentation.

Summary

The course, LY 201--Using Books and Libraries, was originally designed to meet the needs of students for competency in the use of books and libraries. Rapidly increasing college enrollments, together with a limited library staff, led to the production of a series of televised lectures to be used as a primary teaching device. It was hoped that the visual reinforcement possible on the television presentation would more than offset any loss from "live" face-to-face lecturing. The present study was made to compare the results of the conventional and the illustrated television lecture methods.

CHAPTER II

LITERATURE AND RESEARCH ON USES OF EDUCATIONAL TELEVISION

Development and Status of ETV

Though television was known to be technically feasible as early as 1884,[1] it was not until 1945 that it became commercially available and rapidly gained popular acceptance. In 1946 there were, in the United States, only six television broadcasting stations and 8,000 receiving sets. By 1959, however, after an explosive growth had occurred, there were 519 stations and an estimated 45½ million receivers. Like no other previously developed medium of mass communication, television almost overnight attained widespread acceptance.

In 1952, when the Federal Communications Commission established allocations for television stations, it set aside channels for education in 242 communities. Other channels were added later, until in 1963 there were 330 educational channels reserved. The first station licensed to transmit educational programs was WCET, Cincinnati, although the first station actually to begin broadcasting was KUHT, Houston, Texas, which began in May 1963.[2]

---

[1] James W. Brown, Richard B. Lewis, and Fred F. Harcleroad. A-V Instruction Materials and Methods. Second Edition. New York: McGraw-Hill Book Co., 1964. p. 211.

[2] Federal Communications Commission. Broadcast Primer. INF Bulletin No. 2-B. Washington, D. C.: The Commission, 1951. p. 23.

"In May 1963 the more than 79 educational television stations (11 of these on nonreserved channels) which operated within the United States reached an estimated audience of 70 million persons."[3]

Time for educational broadcasting is characteristically classified into that of daytime (for in-school viewing), and that of nighttime community service. There are several ways in which in-school educational broadcasters use this time. Among them are:

> 1. Systematic and regularly scheduled programs where the major load is carried by the studio teacher, with little or no help from the classroom teacher in the teaching of that subject or area.
>
> 2. Systematic and regularly scheduled programs to supplement the teaching of the classroom teacher. Such presentations cover the same content as that of the classroom teacher; they may or may not be essential to the course, but are presented in a manner which the classroom teacher could not duplicate in the classroom.
>
> 3. Systematic and regular programs as supplements, which employ kinds of materials that highlight the subject in a different way from that of the classroom teacher.
>
> 4. Remedial instruction, which is corrective or supplemental in its emphasis. It might also be used to assist fast learners to jump ahead in certain areas.[4]

The in-school use of television is seriously limited by the number of broadcasting hours available. There is not enough time to present all the programs desired, nor is it possible through a single channel to present all programs at the times most desired by the teachers.

In addition to the on-the-air educational television facilities, there is an increasing number of closed-circuit operations. The comments made by Christiansen fit the closed-circuit uses as well.

---

[3] Brown, Lewis, and Harcleroad, op. cit., p. 215.

[4] Kenneth A. Christiansen. "Not to Rest Upon a Formula," an address delivered to the Southeastern Educational Television Conference, Orlando, Florida, January 8, 1962.

South Carolina's statewide system started as an experiment in the Dreher High School and was expanded the second year to include five more schools.[5] At the present time it is the most complete educational television network in any state, including each county and, through extensive cable, connecting nearly 200 schools. Programs are made available to other schools through educational broadcasting stations in Charleston and Columbia, because these schools do not have access to the closed-circuit cable.

From Hagerstown, Maryland, a closed-circuit system reaches into all the schools of Washington County except those at the extreme boundaries. It allows presentation of six different programs simultaneously. Other school systems which have closed-circuit television are located in Anaheim, California; Louisville, Kentucky; Pocatello, Idaho; Corning and Courtland, New York; and Galveston and Snyder, Texas. Many colleges and universities connect a number of buildings on their own campuses for television classes. By July of 1960, there were known to be 200 systems in 185 higher educational institutions.[6]

At the college level, courses may be offered for regular credit. These may be taken by students in the classrooms or by adults in their homes throughout the television community. Such courses include a wide variety of subject matter from areas such as history, sociology, psychology, economics, accounting, philosophy, mathematics, science, education, and languages. In the case of home viewers, a trip to the campus for taking the examination may be required. In Chicago, where junior college courses are offered predominately by television, there is a regular enrollment of 35,000 on campus, and an average supplemental enrollment of 1,200 taking 2,300 course hours at home by television.

---

[5] National Educational Television and Radio Center. Current Developments in Educational Television. Washington, D. C.: The Center, 1961. p. 23.

[6] Ibid., p. 25.

WKNO, Memphis, Tennessee, in cooperation with Dr. Frank Laubach, in 1956 produced a series of television programs to teach reading and writing to adults who never went to school. This special instruction for adults was also programed by ETV stations in some Carolina, Alabama, and Pennsylvania communities. Classes meet at local schools under the direction of volunteer workers.

Over 15,000 units of instruction now exist in recorded form in the United States at the elementary, secondary, and college levels. The exchange of these recorded units is so extensive as to require a distribution system under the auspices of the U. S. Office of Education.

In many areas where educational television stations had not yet been established, commercial stations provided the "air time" at rates varying from one hour per week to more than an hour each day. Some of these arrangements, such as those in Chicago and Philadelphia, were of many years' duration before operation of their own stations.

On the whole, the quality of programs used in instruction is disappointing. This is the result of the cost of producing and servicing television courses, lack of strict criteria upon which to measure effectiveness of these programs, and the difficulty in controlling extraneous variables for research purposes. The execution of the plan in evaluation is also a fault.

The National Educational Television and Radio Center concentrates on production beyond the means of the average station. The

Center has recently completed agreements with Radiotelevisione Italiana, which will provide for exchange of programs. Other arrangements have led to the formation of "Inter-tel" (International Television) and include several European countries and Japan. One of the more interesting plans is for a series of programs which present brief glimpses of individual countries. The significant part of this plan is that no country will picture itself. Some other country will. This will prevent propagandizing or presenting a distorted view of one's own country.

Summaries of Research

The most systematic, and perhaps the best, studies of televised instruction have been those which have been supported by foundation grants or sponsored by the military. In these cases the controlling personnel have been researchers and almost all of the studies have concerned closed-circuits.

Kumata summarized the results of many experiments involving television in its early development. His review is limited to deliberate instructional courses by television, and covers the first four years of effort in television. Kumata answers a series of 16 questions by citing the research relevant to each.

1. Do students learn by television? Television students have been found to do significantly better than control students when measured by tests of achievement or of retention of materials covered in the television courses.

2. How do students taught by television compare with those taught by other media? The answer to this question is probably the best documented of all. On the whole, television students have done as well as other students and at times somewhat better. Comparisons included television compared with regular classroom lecture, television compared to in-studio classroom, television compared to audio only, and kinescope compared to film.

3. What is the effect on retention of materials learned through television? No long term retention studies have been done, but for periods ranging up to eight months, studies indicate significantly better scores on tests are made by students taught by television. An interesting side point is that students who had done well, and those who had done poorly, in televised classrooms maintained relative positions . . . that is to say, that forgetting seems to be proportional to the amount learned and was independent of the medium by which the information was acquired.

4. What methods of teaching in television are the most effective? Although comparisons were made between many methods, the three most common, lecture, discussion and interview, showed no significant difference in their effectiveness, when measured by an immediate post-test. Military studies, including types of lecturing methods, showed that when the lecturer talked directly to the students with no use of dramatization, this method was effective. A combination of dramatic action and narration was held not as effective. Narration, by itself, or in combination with some other form of teaching was extremely effective. The insertion of short film segments which had action was the most effective.

5. Under what audience conditions does learning by television seem effective? Varying the size of class from 14 to 200 seemed to have little effect upon amount of learning. Proctoring seemed to have little effect, whether provided by peers or staff. Discussion arrangements, varying from 15 minutes following television presentation to one class period each week, seemed to have little effect. Student position in the television classroom made little difference. Students taking the same class at home seemed to do as well as those in the classroom.

6. Who learns best by television? Some effect is noted when studying the differential learning of low aptitude students. In military studies, some indications exist that low aptitude students learn more from television presentations. However, other studies by other people indicated the same rank order as ability in the television compared to regular classroom presentation.

7. How important is intercommunication or feedback? In many of the studies, no significant difference could be measured when direct interconnection existed with the lecturer who presented the television lesson. In some cases, the researchers indicated that there were some unnecessary and trite questions which might have been eliminated if feedback had not been provided. Some feeling existed that from the instructor's point of view, there was enough valuable feedback from the studio technicians that none was needed from the classroom.

8. What kinds of subject matter are best taught over television? Practically every field was tried. Nearly everyone met some success and some failure. In all cases, it was indicated that preparation for each lesson was better than would be expected in a live lecture. In all cases, some students did measurably better than others. Television

instruction was superior for teaching interrelationships among parts of equipment, teaching paired-associate or rote learning, giving recognition training, and teaching manipulation of small pieces of equipment. Demonstrations and lectures scored higher than other types of television lessons.

9. How are instructors chosen for television teaching? The most frequently mentioned factors were: subject matter proficiency, teacher personality, reputation as a good teacher. Most hiring officials indicated a preference for a good classroom teacher to be taught television techniques over a trained television personality to be taught teaching skills.

10. What are attitudes toward learning by television? In a great many of the studies, a study of attitudes toward television is a minor appendage to the main part of the study and may be limited in the rating scale. Interpretation should be done with extreme caution, for respondents may give higher ratings to instruction immediately concluded, when asked for a comparison to other courses which they have had. Most students indicated they would take additional courses by television. Preference for a certain length of television lesson usually took the length of the television lessons just completed, and varied from 15 minutes to 30. Teacher preference was 15 minutes for primary school children, 30 minutes for elementary or secondary school children.

11. What do we know about audience size? Audience sizes are quite large. There could be no median range as stations broadcasting in metropolitan areas had larger audiences than those in less populated areas, and closed-circuit systems were limited to sets connected to the circuit. However, size seemed to be related only to the type of presentation method, not to content, or grade level.

12. What is the composition of the audience for television? College courses showed the majority of students in the 30-40 year group. Some extremes went from 19-68. Public school programs ran as would be expected for population ages in these schools. Adult courses had audiences which were predominantly female. This seemed to be related to the time of broadcast. Education of audiences varied from little to completed high school. Few students had two years of higher education (college), except in those courses designed as college courses, where some of the viewers were graduates.

13. What is the amount of viewing by the audience of telecourses? Viewers do not see all the lessons of a course, even when enrolled for credit. Attrition rate for courses is given in a few instances. One such report indicated about 20-25 percent is not unusual.

14. What is the best way to publicize a television course? Television was best, followed by word-of-mouth, mailed notices, and newspaper ads.

15. What are the most liked features of telecourses? For languages, drill and vocal practice; in psychology, the instructor; in in-school programs, the showing of children.

16. What tips on television presentation do we have? Most of the recommendations had to do with receiver location and size. Height above the floor varied from 54 inches to 6 feet. Not more than 20 people should view a 21 inch (the minimum classroom size) set, and viewing should not be in auditoriums, but in classrooms. No projection television should be used. The use of color adds little, but good contrast is important in black-and-white. The use of visual aids showed that only one panel of blackboard should be shown at a time and either white chalk on a gray board, or yellow chalk on a green board showed up well.[7]

Another comprehensive survey of research was made three years later by Holmes,[8] in which summaries of studies in educational television to 1959 were included. Since these are again covered in the volume edited by Schramm at a later period of time, a separate report will not be made on Holmes.

Schramm, in 1962, while discussing what is known about learning from educational television, summarized basic television experimentation in a manner similar to that done by Kumata five years before. Schramm's summary involves most of the studies following the Kumata report and deals with the following areas:

1. Learning from television. The early conclusions about instructional television are that it is at least as effective as ordinary classroom instruction when measured by the usual final examinations or by standardized tests made by testing bureaus. This begs the question of whether the "intangibles" of televised teaching are as beneficial as those of ordinary classroom teaching, and this is a question which we must consider. It is clear that television instruction has been used

---

[7] Hideya Kumata. An Inventory of Instructional Television Research. Ann Arbor, Michigan: Educational Television and Radio Center, 1956. pp. 3-30. See also pp. 31-115 for abstracts of articles.

[8] Presley D. Holmes, Jr. Television Research in the Teaching-Learning Process. Detroit: Wayne State University, 1959. 152 pp.

with greater success in the grades than in high school or college.

2. Student attitudes towards instructional television. Students in grade school typically think they learn more from televised classes whereas high school and college students are more doubtful.

3. Teacher attitudes toward instructional television. Most teachers who teach on television come to like it. Those who do not teach tend to be suspicious and resistant. The real center of teacher resistance to instructional television is in the colleges.[9]

Beyond the basic problems of learning and attitudes, several questions are asked more often than others about instructional television. Schramm lists the following:

1. Is there any kind of student who profits more than other kinds from instructional television? Although the data are not clear, some agreement exists that both the brighter and the slower students derive some differential benefit. But it must be admitted that we do not yet understand the relation of the mental ability to the differential learning from television.

2. Does the class size make any difference in learning from instructional television? No measurable differences appear, though students generally prefer to be in small rather than large classes.

3. Does televised teaching make any difference in retention of subject matter over a long period? One study found that television students remembered more at the end of a month, another found no significant difference.

4. Is there a novelty effect in the reported results? It may be taken for granted that there is. In some cases it can be isolated--there is little evidence to indicate that these might be giving us spuriously high scores.

5. Are we measuring the "intangibles"? There has been some attempt to find out whether teaching--because it presents an authority rather than inviting democratic discussion--might develop authoritarian personalities in students. There is no evidence to confirm this, however.

---

[9] Wilbur Schramm. "What We Know About Learning from Instructional Television." Educational Television: The Next Ten Years. Stanford, California: Institute for Communication Research, 1962. pp. 52-55.

6. What do we know about the relation of forms of televised teaching to learning? Much research on the forms of effective teaching exists for films. Much of this is undoubtedly applicable to television. However, the net result of this type of research in television is that the belief that good teaching is much the same on television or films or the lecture platform seems to be true.[10]

Strengths and Limitations of ETV

Schramm's summary emphasizes the fact that learning does take place when television is used in instruction. He points out that we can say confidently that students learn from it, and they learn fast and efficiently. But of that we have been fairly certain for some time. The further steps we have now taken put us in position to say something about the conditions under which a student learns more from television, and something about what he learns from television."[11]

Schramm's comments are a contrast to statements made just three years earlier (1957), such as these: There is every reason to expect that there would be less learning from a television lesson. There is no intellectual give-and-take, which teachers believe characterizes effective classroom teaching. There is little opportunity to adjust to individual rates and needs. There is no opportunity for students to feed back their responses or to signal their lack of understanding. There is good reason to expect that conditions would favor less well informed students.[12]

---

[10] Ibid., pp. 56-65.

[11] Ibid., p. 66.

[12] Charles F. Hoban. "Hope and Fulfillment in Educational Television Research." Audio-Visual Communications Review 6: 165-71; Summer 1958.

However, 86 percent of the 393 experimental comparisons in "live" situations, as studied and reported by Schramm, have resulted in as much or more learning in a television presentation as in a regular classroom.

Television has many advantages, but it is not an educational cure-all. The advantages of using television in education lie, according to the North Central Association, "in the extension of the impact of superior teachers, the multiple sensory impact on the student, and the one-to-one intimacy of the learner with what appears on the television screen. . . . The responsibility of educators is to use the advantage of the television medium to achieve the goals of education more effectively."[13]

Television will not eliminate the classroom teacher. It has no effect upon the recognized goals of education. Rather, it suggests other and possibly better means of reaching the same goals. Alert educators have always experimented with, and learned to use, many new teaching methods and devices. Television holds promise of improving the effectiveness of the educational process.

Some of the weaknesses of television have been evident for some time. The list includes: (1) it doesn't stop to answer questions; (2) it doesn't readily permit class discussion; (3) it can't conduct drill efficiently; (4) it doesn't adjust well to individual differences; (5) it tends to encourage a passive sort of learning rather than an active seeking.

---

[13] North Central Association of Colleges and Secondary Schools; Subcommittee on Television of the Commission on Research and Service. The Uses of Television in Education. Chicago: The Association, March 1961. p. 13.

Television also has great strengths. It is very good at bringing demonstrations to the classroom: it lets everyone look through a microscope at the same time, gives all the medical students a good view of surgery, permits handling film in a remote location with a minimum of transitional difficulty. It lets a school or college hear its best teachers, rather than rationing them. It provides a change of pace. It brings a sense of timeliness to the classroom where that helps. It concentrates attention.

"These advantages are not small. They help to explain why television has not done so badly in the classroom as many observers expected it would."[14]

Though television does introduce some efficiencies, such as permitting larger groups to participate, and thus may be said to be an economy measure, saving money alone is not the real justification for its use. The real basis should be the improvement of education. "The use of large classes, for example, is of value, not because it saves money, but because large class instruction by television makes it possible for the classroom teacher to concentrate on small classes and personalize attention to the students. The result is not the elimination of teachers but their redeployment.[15]

Lecturing to students, Christiansen listed a summary of relationships which are found in successful television teaching:

1. Television offers high quality learning opportunities which might not otherwise be available.

---

[14] Schramm, op. cit., p. 67.

[15] Ibid., p. 26.

2. Exposure to television does not guarantee learning; learning takes place within the learner, not on the television screen.

3. When used by itself, without the classroom teacher, television makes a minimum contribution to learning.

4. Teaching methods, on television, or in the classroom, should help students see themselves as reasoning persons, worthy of respect, capable of self-direction.

5. Concern should not be to teach lessons on television, but to present on television opportunities for desirable learning.

6. Query not what is taught best by television, but rather what purpose television can serve in a given subject area. EXPERIENCE MAY CHANGE PURPOSE.

7. A teamwork approach seems essential: curriculum specialist, principal, teachers, television production personnel, audio-visual specialist.

8. Requirements for effective teaching are not less for television than for the classroom.

9. Education is not a product which can be packaged and produced.[16]

One of the major results of television instruction may be the giving of increased attention to methods of teaching. "Teaching on television is different from other teaching: it imposes sharper discipline upon method; it increases the use of a variety of devices as teaching aids; it introduces innovations that can affect all teaching, in the classroom as well as on the screen."[17]

Self-evaluation for television teachers whose lessons are taped is a valuable opportunity. Teachers on television place themselves in the path of criticism from their peers. Review and enlargement upon previously recorded lessons becomes possible through video-tape. Classroom teachers into whose rooms these recorded lessons are played benefit through their familiarity with the invariable content of the lessons.

---

[16] Kenneth A. Christiansen. Class lecture notes in Communications 628--Radio and Television in Education, University of Florida, Spring 1962.

[17] Lester Asheim. "A Survey of Informed Opinion." Educational Television: The Next Ten Years. Wilbur Schramm, editor. Stanford, California: Institute for Communication Research, 1962. p. 26.

Classroom teachers may learn, along with their students, from lessons presented on television. Content which is either new or of a complex nature can be grasped by the classroom teacher as it is presented to the students, without loss of prestige or embarrassment. Thus, content and method both may be upgraded by participation in televised programs.

Standards and Evaluation of ETV

By 1961, the North Central Association of Colleges and Secondary Schools had adopted a set of basic principles for the planning and use of television in instruction. Because of their value, these are quoted herewith.

> 1. Television is an important instrument for teaching and learning at all levels: elementary, secondary, higher, and adult.
> 2. Television is a new medium of communication, not a new method of teaching and learning. It permits many variations in the teaching-and-learning process, but its effective use is based upon the same fundamental psychological principles which apply to all successful processes of learning. The attitudes of the learner and the results of teaching are as certain to be affected by the quality of the learner in televised as in conventional instruction.
> 3. Students can learn as well where television is used by the teacher as in the conventional classroom situation; frequently they can learn better.
> 4. The proper use of television provides new incentives for students to assume more responsibility for learning.
> 5. Television is not a self-contained educational entity, but an instrument which is significant only in the particular educational context in which it is employed.
> 6. Optimum realization of television's potential can result only from integration of the teaching arts, the graphic arts, and the electronics communications process.

7. The use of television can improve the total program of instruction.

8. Effective television teaching demands more preparation and the assistance of more specialized personnel than does conventional instruction.

9. The successful use of television imposes responsibility for and highlights the necessity of cooperation among administrators, teachers, and other specialized personnel.

10. Television is such a versatile, dynamic, and new medium that its educational use not only encourages but demands a continuous appraisal of the ways in which it is or may be utilized.

11. Television provides new and better ways of relating the activities of pupils, teachers, and parents and making the community aware of educational processes and needs.

12. Appreciation of the values of television as an educational medium increases in proportion to experience with its proper uses.[18]

Many techniques can be used to evaluate instructional television. Among the techniques are checklists, pupil attitude scales, laboratory exercises, written tests, oral examinations, group discussions, group projects, and standardized tests. In too many instances, a comparison of the scores on written tests achieved by pupils who have received certain instruction via television and those who received identical instruction without television, is used as the major technique for evaluating televised instruction. Practically all these comparisons, as mentioned previously, show no statistically significant differences between the televised and nontelevised instruction, as any fairly knowledgeable person in education would predict. Other techniques are more helpful in evaluating the effect of instructional television on behavioral outcomes.

When there is no standardized instrument to measure the behavior or attitude with which we are concerned, it is necessary to develop the evaluation instrument for the particular situation. The reliability and validity of these instruments would be determined before using them. . . . The items on the evaluation instrument or scale should be reviewed by a specialist in the particular content field in order to establish its validity. Also, a pretest [of the instrument] should be made before using the instrument in the actual evaluation situation. The specific objectives of televised instruction must be known if the evaluation is to have any real value.[19]

---

[18] North Central Association of Colleges and Secondary Schools, Subcommittee on Television of the Commission on Research and Service. The Uses of Television in Education. Chicago: The Association, March 1961. pp. 10-11.

[19] Robert M. Diamond, editor. A Guide to Instructional Television. New York: McGraw-Hill Book Co., 1964. pp. 166-71.

Summary

As the use of television increased in a spectacular manner and educators tried out many new ideas, studies of these experiments began to show areas where television could be of value from kindergarten through adult levels. Exchange of recorded educational programs may provide new avenues of learning experiences. There are, however, certain limitations imposed when television is used in instruction. Research in the educational uses of television may assist in reëvaluation of educational goals and methods of teaching.

CHAPTER III

PRESENTATION AND ANALYSIS OF THE DATA

With reference to the data which are to follow, it should be borne in mind that the students registered for LY 201 without being told that one section was to be taught by televised lectures. Their choice was based upon selection of a time which best fit with their other course schedules. No attempt whatever was made to assign students to one class or the other.

Comparability of Groups

The two sections were analyzed with respect to data available at the beginning of the course. Both groups were similar as to the divisions of the University and the college year in which they were enrolled (Table 2). They have similar backgrounds of experience at the University (Tables 3 and 4), and nearly the same level of college achievement (Table 5).

LY 201 was established originally to meet the needs of the students in the School of Journalism and Communications. One might expect, therefore, that this School would provide the largest number of students for the course. This School, however, is entirely an upper division school, whereas students in the freshman and sophomore levels of the University are all enrolled in the University College. Accordingly, the University College accounts for the largest number of students in both sections of the course. LY 201 is a sophomore level course and more than half of the students in each section were from the sophomore class. There were, however, students from all four levels in each section. Seven upper division schools were represented, the School of Journalism and Communications providing the largest group, as expected.

TABLE 2. CLASSIFICATION OF STUDENTS TAKING LY 201, BY SCHOOL OR COLLEGE AND YEAR

School or College	Section[a]	Total Number	College Year			
			1	2	3	4
University College	C	39	3	36	--	--
	TV	70	9	61	--	--
		109				
Arts and Sciences	C	5	--	--	3	2
	TV	4	--	--	0	4
		9				
Architecture and Fine Arts	C	0	--	--	0	0
	TV	1	--	--	1	0
		1				
Education	C	3	--	--	2	1
	TV	3	--	--	2	1
		6				
Health Related Services ..	C	0	--	--	0	0
	TV	1	--	--	1	0
		1				
Journalism and Communications	C	18	--	--	16	2
	TV	18	--	--	15	3
		36				
Pharmacy	C	1	--	--	0	1
	TV	0	--	--	0	0
		1				
Physical Education and Health	C	0	--	--	0	0
	TV	1	--	--	0	1
		1				
ALL UNITS	C	66	3	36	21	6
	TV	98	9	61	19	9
TOTAL	C and TV	164	12	97	40	15

[a] C indicates Conventional section, taught directly by an instructor; TV indicates the Television section, as previously described.

It is expected that the prerequisite course, C-3--Reading, Speaking, and Writing, will have been taken by underclassmen at the University of Florida. Many students now transfer to the University of Florida from junior colleges and other universities, and for these students the prerequisite is not mandatory. There will, therefore, be some students in the course who have not had previous experience in working with library materials. Table 3 shows the number of students who had taken the prerequisite, and those who had not. The proportions who had and had not taken the earlier course were the same in the two sections of this study. Neither section, therefore, had any advantage in this respect.

TABLE 3. STUDENTS WHO TOOK THE PREREQUISITE COURSE, C-3--READING, SPEAKING, AND WRITING

Section	Had C-3	Did Not Have C-3	No Response	Total
C	44	20	2	66
TV	66	28	4	98

Many students at the University of Florida have previously taken courses by television. Table 4 was prepared to show the number of students in the study who had previously taken courses by television either in high school or in college. There were equal numbers of students in each section who had no previous courses by television. The proportion of students with television experience was, however, somewhat larger in the television section. As indicated earlier, this was a matter of chance and not of choice, as the students did not know there was to be a television section. Whether this moderate difference provided any advantage or disadvantage is not known.

TABLE 4. STUDENTS WHO HAVE PREVIOUSLY TAKEN COURSES BY TELEVISION

Experience	Conventional Section	Television Section
One Previous TV Course	11	5
Two or More TV Courses	19	46
Previous Experience Total	30[a]	51[a]
No Previous TV Course	33	33
No Response to Inquiry	3	14
TOTAL	66	98

[a] The two sections are not significantly different, at conventional levels, with respect to the proportion of students who have had previous experience with television courses.

Further evidence of the comparability of the two groups is to be found in their records of achievement in higher education, as attested by their grade-point averages. The distribution of the averages for each section is shown in Table 5. The difference in means for the two sections is 0.11--one-ninth of a grade point. A difference this large or larger (in either direction) would occur solely as the result of chance fluctuations of sampling one-third of the time. The difference observed in the two means, therefore, is one which is readily accounted for by chance.

TABLE 5. COLLEGE OR UNIVERSITY GRADE-POINT AVERAGES: STUDENTS IN LY 201

Section	Grade-Point Average[a]						
	0.0-0.9	1.0-1.9	2.0-2.9	3.0-3.9	Total	Mean	S.D.
C	1	20	38	7	66	2.17	0.65
TV	2	41	50	5	98	2.28	0.63
TOTAL	3	61	88	12	164	2.23	0.64

[a] As of the end of the term in which LY 201 was taken.

On the basis of the several lines of evidence available, we conclude that the two groups of students were equal within the usual limits of random sampling.

Comparisons on the Basis of Special Tests

In order to provide a supplement to the methods of assessing student learning as regularly employed by the teachers of the course, two special tests were constructed. One of these dealt with library materials in the Social Sciences and the other with materials in the Humanities. Both tests were prepared, administered, and scored by the present writer.

Inasmuch as these tests were added to the regular schedule of instruction, they had to be relatively short so as not to encroach seriously on teaching time. On the other hand, it was important that they measure as widely and as dependably as possible within the limited time. On this basis, it was decided to employ four-alternative multiple choice, objective test items, with a limit of ten items on each test. This limitation required that the items be well chosen and carefully prepared.

The judgment of librarians was called upon to indicate the most important points in the lesson, and the construction of the items was given considerable attention. Conferences were held concerning the appropriateness of the alternatives, and the completed test in trial form was submitted to librarians and to a number of undergraduate students who had not had any training in library use. Sample sets of items from the two tests are shown in the Appendix.

These tests were in all instances given without any advance notice that there would be any tests on these subjects. The only tests that had been announced were the two quizzes, the midterm, and the final, all of which were part of the regular teaching procedure. Furthermore, the students were given no suggestion that an experiment was under way--that is, that learning in the conventional section would at some time be compared with learning in the television section.

The test on the materials in the Social Sciences was given to both sections of the course, LY 201, after they had received the Social Sciences I lecture. The position of this lesson in the schedule of the course can be seen by referring back to Table 1, page 6.

The responses to the test were analyzed first of all with respect to the difficulty of the individual items. The number of times each item was missed, by students in each section, is shown in Table 6. In general, the items show a desirable variation in difficulty. There were no questions which everyone could answer and no questions which no one could answer. Items 5, 7, and 10 might be made somewhat more difficult, and perhaps moved toward the beginning of the test. The total scores made by the students would suggest that the test was not sufficiently difficult to measure them fully. Undoubtedly, further refinements could be made if it were desired to use the test a number of times in the future.

TABLE 6. FREQUENCY WITH WHICH ITEMS WERE MISSED:
TEST ON SOCIAL SCIENCES I

Section	Question Number										
	1	2	3	4	5	6	7	8	9	10	Total
C	31	9	12	11	4	24	5	13	16	6	131
TV	23	5	8	9	2	22	4	13	13	5	104
TOTAL	54	14	20	20	6	46	9	26	29	11	235

Table 7 gives the distribution of scores made by the students in each of the sections, and also shows the means and standard deviations. On the assumption that the students in the two sections were of equivalent ability and readiness, the results of the test would indicate that the television presentation of the material was highly satisfactory. In fact, for the television section, the test was not sufficiently difficult, with more than a third of the students making perfect scores.

TABLE 7. RESULTS FOR THE TEST ON SOCIAL SCIENCES I LECTURE

Section	Score												
	1	2	3	4	5	6	7	8	9	10	Total[a]	Mean	S.D.
C	0	0	0	0	1	9	15	18	9	9	61	7.85	1.30
TV	0	0	0	0	0	2	9	18	33	35	97	8.93	1.05

[a] Five students from the conventional section and one from the television section were absent from this test.

It may be of some interest to compare the mean scores made on the test by the two sections, in light of chance variations arising from fluctuations of random sampling. The mean of the television section exceeded the mean for the conventional section by 1.08 questions. While this amount might seem of little importance, it is large anough, however, to be exceedingly stable with reference to sampling fluctuations. The standard error of this difference, based on the data shown in Table 7, is 0.20 questions. The difference is 5.4 times its standard error, and would, therefore, occur purely by chance only three times in one hundred million trials.

A second special test was prepared as a means of providing further measurement on the relative performance of the two groups. In this instance, it was decided to administer the test both as a pretest and again as a posttest, in order to furnish more decisive evidence of the learning in a single lecture. Accordingly, a test was prepared to cover the library materials in the area of Humanities, similar to the test previously used for Social Sciences. On the occasion of the Humanities lecture, the writer appeared in the classroom at the beginning of the period and explained to the students that he had been involved in the production of the course and was making a minor study of some of the lessons in it. He indicated that the taking of this test had nothing whatever to do with the regular work of the course, or the grades on it, and that the instructor would not be shown the test results until after grades had been turned in. He told the students at this time that a "similar" test would be given them at the beginning of the next class meeting in order to judge the effectiveness of the lesson. This delay of one class meeting (one week) before giving the posttest was planned in order to give the students the benefit of the learning which would come from working out their customary exercises in the library. This fact may have acted to reduce any difference in the mean scores on the posttest, inasmuch as it was an experience common to both groups, whereas our principal research concern was in the comparison of the conventional lecture with the televised lecture. For practical purposes, however, interest centered in the complete gain from both the lecture and the exercises, and so the plan allowing the delay was followed.

As before, an item analysis of the test was made; Table 8 shows the number of times each item was missed, by the students of each section, both when the test was administered as a pretest and when used again as a posttest. A study of the responses on the individual items,

TABLE 8. FREQUENCY WITH WHICH TEST ITEMS WERE MISSED ON PRETEST AND POSTTEST FOR HUMANITIES LECTURE

Section and Test	Question Number										
	1	2	3	4	5	6	7	8	9	10	Total
Pretest											
C	21	19	21	7	15	11	46	39	44	12	235
TV	30	38	34	21	13	18	66	51	59	10	340
TOTAL	51	57	55	28	28	29	112	90	103	22	575
Posttest											
C	4	22	17	6	11	6	41	22	36	19	184
TV	0	17	19	8	13	16	57	26	45	17	218
TOTAL	4	39	36	14	24	22	98	48	81	36	402

before and after instruction, throws considerable light on the effectiveness of the presentation regarding the items--or possibly on the validity of certain test items. Which is the true explanation must be decided with reference to a consideration both of the instructional material and of the test item. It might be that both could be improved. Such detailed analysis is left for the instructors in the course. It suffices here to point out that Item 1 shows a gratifyingly successful portion of instruction. Items 4 and 8, in which the misses were reduced by nearly one-half, may be considered as evidence of reasonably satisfactory explanation in this area. The evidence in several items is not all that could be desired. Item 10 shows an increase in the number of errors; presumably either the instruction or the test item was ambiguous.

In spite, however, of possibly disappointing improvements on individual test items, the overall results show a reduction in aggregate number of items missed from 575 to 402--a reduction of 30 percent.

TABLE 9. DISTRIBUTION OF SCORES ON PRETEST AND ON POSTTEST FOR HUMANITIES LECTURE

Section and Test	Score												
	1	2	3	4	5	6	7	8	9	10	Total[a]	Mean	S.D.
Pretest													
C	0	2	2	1	12	17	16	11	1	0	62	6.21	1.41
TV	0	0	3	5	18	27	20	14	3	0	90	6.22	1.30
Posttest													
C	1	1	1	1	4	9	17	17	13	2	66	7.21	1.61
TV	1	0	0	1	3	9	27	24	23	4	92	7.63	1.30

[a] In the conventional section, four students missed the pretest; not any missed the posttest. In the television section, eight missed the pretest and six missed the posttest.

The gain in scores from the pretest to the posttest is shown, for the two sections, in Table 9. This table shows the distribution of individual scores, together with the mean and standard deviation for each section on each occasion. The conventional section advanced from a mean score of 6.21 to 7.21, a gain of 1.00 test item. The television section went from a mean score of 6.22 to 7.63, a gain of 1.41 test items. Since these are gains respectively from a measured initial status, they are logically attributed to learning associated with the presentation of the lectures on the Humanities. As in the case of the Social Sciences, the group in the television section showed a larger gain than the group in the conventional section.

The gains (and losses!) from the pretest to the posttest were analyzed by individual student, and are shown in Table 10 distributed as to size. It is interesting, and perhaps surprising, that a sixth of the 151 students in the two sections showed a loss on the second test. About the same number (27) made precisely the same score on both the pretest and posttest. It is clear from the table that the bulk of the

TABLE 10. GAINS OR LOSSES OF INDIVIDUAL STUDENTS FROM PRETEST TO POSTTEST ON HUMANITIES

Section	Points Loss						Points Gain						Total[a]	Mean Gain	S.D.
	-4	-3	-2	-1	0	1	2	3	4	5	6	7			
C	1	2	3	5	16	12	11	7	1	1	1	2	62	1.02	2.35
TV	0	1	2	10	11	31	15	6	8	3	1	1	89	1.37	1.82

[a] While some students missed both tests, a few missed only one; therefore, the number of students shown here does not necessarily correspond to those found in Table 9.

students either made the same score, or gained only one or two points; this group comprised nearly two-thirds of all students. Consideration of actual gains must be made against possible gains; that is, with a pretest mean of 6.2, it was only possible, on the average, to make a gain of 3.8. Accordingly, those students who made gains of 4 to 7 points, while laudable, were necessarily below the mean on the first test. Other students had no opportunity of making such gains.

The mean gains in Table 10 differ slightly from the gain in means shown in Table 9 by virtue of the fact that there were small numbers of students absent from either one or both sessions. Table 10 necessarily includes the records of only those students who were present for both the pretest and the posttest. Table 9 includes students who were present at either one, or both of the tests.

Again, it may be of some interest to compare these mean gains with gains that might arise, with a given probability, by fluctuations of chance. Such a comparison is more properly made on the basis of the data in Table 10 than those in Table 9, because there was presumably some correlation between the scores made by individual students on the pretest and posttest. The standard error of the mean gain in the conventional section was 0.301; inasmuch as the mean gain was 3.39 times this standard error, we may say, in stochastic terms, that a mean gain this large, or larger, would occur only three in 10,000 times, by chance. For the television section, the standard error of the mean gain was 0.193, and the mean gain was 7.10 times this standard error. Accordingly, if the gain should properly be zero, a gain as large as that made by the television section would occur only once in a fantastically large number of instances. Thus, the gains made by both sections are well established.

One might desire to compare the mean gain of 1.37 for the television section with that of 1.02 for the conventional section. While both are well beyond conventional levels of significance, the superiority of one gain over the other, as something to be expected time after time, is not so firmly established by the existing evidence. The difference in gains is slightly larger than its own standard error. We can say, accordingly, that, on the basis of the results observed here, the odds are nearly six to one that similar gains of the television section would be larger than those of a group taught by conventional methods. While it was not the expection of the study to show that television methods of presentation were generally superior, the evidence in hand would indicate, so far as the present tests are concerned, that the television medium is satisfactorily effective.

Amount of Time Reported by Students

It has previously been mentioned that the instructors requested the students to report each week on the amount of time they had spent in doing the library exercises. It had been hoped originally that changes in the amount of time spent as the course progressed would be indicative of increasing familiarity with the library materials. No such trend, however, was apparent, and the data by weekly report are not shown. A further analysis was made to see whether the amount of time reported by students was related to the grades they received in the course. Again, no pattern emerged. It is conceivable that the amounts reported were not in all cases accurate. Accordingly, no summary is presented.

Evidence from Regular Course Examinations

Further quantitative evidence concerning the relative amounts of learning by students in the two sections is afforded by ratings on the regular work of the course. In this regard, there are the results of two quizzes, the midterm examination, the final examination, the entire set of library exercises, and the final course marks by the instructors. The quizzes and the two examinations were essentially objective, with a small number of short-answer questions included. The library exercises, considered of large importance for learning purposes, were graded by the instructors on a judgmental basis and probably should not be considered as objective. They are, however, only one of five types of instructional evidence on each student, and may be included in the total body of evidence as indicating what, in practice, will be considered as satisfactory or unsatisfactory amounts of learning.

The data for individual students on each type of work are shown in Table 11, together with various summary statistics. The data of main value for purposes of comparing the achievement in the two sections are found in the row of means in the lower section of the table. On the two quizzes, the conventional section had somewhat higher scores. On the midterm and the final examinations, each of which extended through an entire class period, the difference between the groups on one test was

TABLE 11. DISTRIBUTION OF TEACHER-ASSIGNED SCORES
ON WORK FOR THE COURSE, LY 201

Score	Quiz-1		Quiz-2		Midterm Exam		Library Exercises		Final Exam		Course Average	
	C	TV	C	TV	C	TV	C	TV	C	TV	C	TV
100[a]	5	--	--	8	--	--	--	--	--	--	--	--
95-99	5	6	19	15	4	--	17	18	1	1	2	3
90-94	8	6	12	9	4	5	16	47	8	9	10	4
85-89	7	6	9	14	12	16	16	24	9	14	9	18
80-84	10	11	9	13	9	22	9	6	6	21	20	25
75-79	5	7	5	7	13	17	2	2	12	13	9	22
70-74	7	6	3	6	11	11	1	--	9	14	6	14
65-69	1	11	4	6	5	5	--	1	3	8	4	9
60-64	2	7	1	4	2	10	1	--	4	8	1	1
55-59	1	9	--	5	4	6	1	--	6	4	3	--
50-54	4	4	--	1	--	2	--	--	4	3	--	1
45-49	2	3	--	3	--	1	1	--	1	--	1	1
40-44	2	3	1	1	--	2	1	--	1	2	1	--
35-39	--	4	--	--	1	--	--	--	--	--	--	--
30-34	1	3	1	--	--	--	--	--	--	--	--	--
25-29	1	2	--	3	--	--	--	--	--	--	--	--
20-24	1	--	--	--	--	1	1	--	1	1	--	--
15-19	--	--	1	1	--	--	--	--	--	--	--	--
10-14	--	--	--	--	--	--	--	--	--	--	--	--
5- 9	--	--	--	--	--	--	--	--	--	--	--	--
0- 4	2	1	--	1	--	--	--	--	--	--	--	--
Absent	2	9	1	1	1	--	--	--	1	--	--	--
Number	66	98	66	98	66	98	66	98	66	98	66	98
Mean	71	67	84	79	77	74	83	91	74	76	80	79
High	100	98	99	100	97	93	98	98	99	99	97	95
Median	80	68	88	78	79	78	89	90	77	79	82	80
Low	0	26	15	0	37	24	24	68	49	40	42	49
Range	100	72	84	100	60	69	74	30	50	59	55	46
S.D.	22.2	19.7	15.7	19.3	11.1	12.7	13.9	4.7	13.6	12.0	11.0	8.2

[a] Highest possible score.

Statistics in the summary arrays are calculated from actual values not from class-interval midpoints.

offset by a difference in the opposite direction on the other test. On the library exercises, which were turned in each week throughout the course, the students in the television section averaged a number of points higher. In the overall course average, which was a weighted sum of the scores made on the individual tests and exercises, the two groups came out within one point of each other. These final averages were the basis for the official grades reported for the course.

The evenness of the various measures used in the course, as between one group and the other, gives substantial evidence of the equality of the learning as ascertained by the same practical means likely to be employed when the course is taught in the future. It should be noted that this result was accomplished notwithstanding the fact that the television section had three fewer class days--nearly one-fourth of their instructional time--less than the conventional section. Accordingly, this evidence bears out the point, attested by the two special tests, that the television method of presentation is effective and efficient, especially when employed, as in the present instance, along with face-to-face periods for discussion and practical exercises to be worked out. It should also be recognized that this was accomplished with 50 percent more students in the television section than in the conventional section.

At this point, a technical exploration will be made of the effect of weighting on the final course average--referred to from this point forward as "course scores." That is, when the two instructors employed somewhat different weights in combining the various test grades, did this have an appreciable effect on the course scores, and therefore, the grades? Might other sets of weights be considered as having equal validity for the purpose of rating growth during the course? These and related questions will be considered in the section which follows.

The Effect of Weights upon the Course Scores

In deriving the course scores upon which the final grades for students in the course, LY 201--Using Books and Libraries, were based, the instructors indicated that they used certain weights in combining the various scores on tests and exercises. These final scores will be referred to as "Course Scores." The components to which weights were applied were the two quizzes, the midterm and final examinations, and the set of library exercises. In the conventional class each of the quizzes were weighted one-half each and the midterm, final examination, and library exercises, two each. This was slightly different from the weights applied in the television section in that each of the quizzes was weighted one rather than one-half.

There are two questions considered in this study. (1) Did the weights employed actually affect the course scores? That is to say, did they change the final grade which the student might have received had no weights been employed? Was it then, worthwhile to use weights at all? (2) How nearly did the actual force which was exerted by each of the components of the final score correspond to those weights applied by the instructors? The explanation of the technical aspects contained in this question will be discussed later.

A possible third question, which is probably of interest to the instructors, is whether or not the weights which they used were "good" weights and whether or not they might be improved upon. Were the weights in the right direction, and in the right amounts? This question involves human judgment and, therefore, cannot be answered by statistical methods, although the statistical methods can develop the picture for judgment.

Statisticians have given a great deal of attention to the subject of weighting. Weights can be obtained by mathematical means if there is some quantitative external criterion by which to test the weighted sum of several components. If there is no such external criterion, weights then must be selected on the basis of what final result is desired from the weighting. The usual basis for selecting weights applied in educational tests is the judgment of those who understand educational measurement combined with the judgment of persons responsible for the course. These are aside from some relatively formal mathematical assumptions. Gulliksen made an extensive survey of various criteria for weighting components of a total score (such as the course score), and refers frequently to the desirability, indeed the need for, the use of judgment.[1] For example, in a study where there is no quantitative external criterion, "we decide on a judgemental basis which of the parts would be weighted equal, which higher, and which lower. . . . When these decisions are made, the weights are found by solving a set of equations . . . [containing] the desired correlations determined by judgement."[2] Gulliksen pleads for inspecting results in the light of judgment. The following points to what he describes as "a mathematically very elegant method of weighting" which contains certain dangers.

> The remedy here, as in all other uses of mathematical procedures, is to inspect the results to see if they have any peculiar characteristics. Any set of tests that have low weight for the criterion should be inspected to see if they would be regarded by experts in the field as being important. . . . In general, we

---

[1] Harold Gulliksen. Theory of Mental Tests. New York: John Wiley and Sons, 1950. pp. 312, 335, 341, 342, 345, 350-51, 357-58.

[2] Ibid., p. 342.

> should alter the variables entering into the two batteries if the results do not seem to be appropriate.
>
> Another way of stating the caution given in the foregoing paragraphs is to say that a mathematical method should be adopted only to choose between alternatives that are judgementally very similar. . . . In general, we may say that mathematical procedures are appropriately used when they serve to guide thought. If an attempt is made to utilize such routines as a substitute for thought, we may unwittingly arrive at and accept absurd conclusions.[3]

For those who call upon mathematics and statistics to relieve them of the supposed inferiority of human judgment, the preceding remarks must be disappointing. They are, however, made by a man who has given his professional life to the field of educational and psychological measurement. Statements similar to these are found by other authors who are likewise specialists in the applications of mathematics and statistics. While it is not necessary to pursue this, the point is that in professional work judgment is an inescapable responsibility. Formal tools should be used as aids, not as masters. With this background it should be clear that no implied criticism is intended for the employment of judgment in the selection of test weights. Any progress dealing with the area of improving the application of weights must, therefore, be looked for in terms of human judgment. It is now desirable to proceed to the first two questions raised.

A weight which is applied to a test is thought of by statisticians as the relative power of scores on that test used to find, on the average, the relative position of an individual in the total score distribution. The statement "on the average" hinges upon the common practice of applying a constant weight to all scores of a given test, and because the scores are not distributed with equal intervals between scores, the weight applied will affect some differently. On the whole, however, it may be said that a test (or any component of a weighted composite) will have an internal (natural) weight based upon the variability of the scores when these scores are compared with the variability of scores on other tests which are used to make up the composite. A common misunderstanding in this area makes it worthwhile to point out that certain characteristics of tests have no necessary connection with the weight of the test. For example, the length of a test does not affect its weight in that a long test may exert less weight than a shorter one if the scores on the long test have less variability than those of the short test. One must then be aware that it is not the length of a test but rather the variability of scores which affect weight. Further, a long test may be either very easy or very difficult so that little variability on the scores exists.

---

[3] Ibid., pp. 350-51

The average of the scores on the test does not give it more or less weight (unless it is so low or so high as to restrict the variability of scores). Gulliksen states, "both factors should be completely ignored in considering weighting problems. . . . The number of items on a test, the perfect score and the test mean have no affect in determining the test's influence in a composite and should be ignored when considering the appropriate weight for a test."[4]

One who is not well trained in the area of statistics will probably feel somewhat confused at this point, particularly when considering the idea that the mean of a set of component test scores has no necessary connection with the weight of that test. A teacher who is used to deriving a semester score by adding the several component scores and dividing by the number of components for a student certainly thinks about the size of each score and the size of the resulting average. To such a teacher the amount (size of each score) is virtually the "whole story."

---

[4] Ibid., pp. 337, 338.

One must recognize the difference between weight (power to determine the relative placement in a composite) and the matter of raising or lowering the total score of most or all of the students. In discussing weight there is no connection between weight and size of a set of measures. Statisticians are used to raising or lowering a set of total scores as may be called for, for practical considerations. They merely add or subtract an amount which does not alter a student's relative position in the group. In the statisticians eyes the actual size of a score is highly relative since it depends upon a number of items including the difficulty, length of time, directions given, scoring scale, accuracy of scoring and number of items for a given test. The score has little or no meaning in itself. It becomes meaningful when compared to other scores for the same student in other tests. The distribution of scores (locally, sometimes nationally) which provides the background for this comparison is what gives meaning to an individual score. As long as a student's score remains in its same place in the distribution, its meaning remains the same. Adding or subtracting a constant, multiplying or dividing by the same number does not disturb the meaning of a single score if one treats the entire set of scores alike.

Having this explanation of the statistician's point of view, the first question which was raised, namely, how did the weights employed by the instructors affect the scores, may now be dealt with. Answering this question through the use of statistics merely calls for a correlation for each pupil in the class. The two scores used in the correlation tables were (1) the sum of the five scores given by teachers added together without weights and (2) the sum of the same five scores, but with the weights previously described employed before the scores were added. For example, each score on the quiz was multiplied by one (taken as it was). The other scores were multiplied by two. To reduce the totals to reasonable and comparable size the first set was divided by five, the second by eight.

The coefficient of correlation for the 98 students of the television section was 0.976 which, as correlations go, is exceedingly high. In all probability it exceeds the reliability of any of the tests or the total scores. The evidence provided by this correlation is that nothing was accomplished by the weighting. It does not mean that the weighting was not applied in the right direction, but that it was not strong enough to affect the relative position of a student in the course score distribution. The weights applied probably had less affect than various inaccuracies or uncertainties of the tests themselves and probably accentuated some "errors of measurement" and reduced others. The conclusion is that it did not materially affect any score; it really did not matter. Another way of comparing the weighted and unweighted course scores would be to subtract one from the other for each student, and present the difference as a frequency distribution. Table 12 shows the frequency distribution of these differences. Some differences were positive, some negative as one might expect. The largest difference was 11. This may seem like a large difference, but one cannot tell whether the errors of measurement might not also lie in this range. In light of

TABLE 12. DISTRIBUTION OF DIFFERENCES BETWEEN WEIGHTED AND UNWEIGHTED COURSE SCORES FOR STUDENTS IN THE TELEVISION SECTION

Difference	Frequency
11	1[a]
10	0
9	0
8	0
7	1
6	1
5	4
4	6
3	7
2	17
1	21
0	20
-1	12
-2	3
-3	1
-4	2
-5	1
Range 16	Total 98

Mean 1.1 Standard Deviation 2.5 Absolute Average 1.9

[a] Case No. 71 TV, who earned two zeros on Quiz-1 and Quiz-2.

measurement theory and experience one could reasonably expect some of the "errors" to be of this size. It is doubtful then, that the differences in the distribution would be more than normal "chance" variations in a regular classroom measurement.

The mean difference is 1.1. On the other hand, the average absolute size of the differences is 1.9. Another interpretation one might make is through a comparison of this average with the range of score points represented by a single letter grade in the final marks given. A grade of "A," for instance, represented a range of ten units of course score, while a grade of "B" covered a range of ten course score units. Such comparisons would not mean that students would have received higher or lower letter grades from one or the other set of course scores. They simply indicate the size of the element of uncertainty between the weighted and the unweighted scores.

A similar analysis of the scores for the conventional class was not undertaken as there was no reason to do so. There will be no comparison between the two groups in this respect, and the evidence regarding this general question seems to have been adequate.

At this point, it would be well to examine certain aspects of weighting that have been brought out in the measurement literature. In 1931, Scates and Noffsinger,[5] noting the lack of material differences between composites of a test score arrived at by weightings, analyzed possible factors which contribute to this result. They reported two major factors: (1) the "vigor" of the weights; (2) the correlation between the two sets of test scores, or the other measures, to which the weights are applied. If the weights do not differ much among themselves, they can have but little effect. Scates and Noffsinger proposed measuring the diversity of a set of weights by coefficient of variation, which is the standard deviation of the weights divided by their mean.[6] This is an especially appropriate measure for weights, for the absolute size of the weights is not an aspect that is effective. It is the ratio of the weights, so that weights of one and two are just as powerful as weights of 100 and 200. They set up tentative standards, suggesting that weights having a V value of less than 25 should be considered mild; those between 25 and 75, moderate; and those over 75, strong. The weights employed by the instructors in the present instance would be regarded as mild by almost any criterion, and any effect such weights might have would be virtually eliminated by the correlation between the various means of rating. The answer to the first question then is that the weights had little effect. As to the worthwhileness of employing weights in the future, it might be said that such weights might act to reduce certain extreme (atypical) scores when these occurred on the shorter, and less reliable, means of measurement. For the majority of scores, the weights would have no value.

---

[5] Douglas E. Scates and Forest R. Noffsinger. "Factors Which Determine the Effectiveness of Weighting." Journal of Educational Research 24: 280-85; November 1931.

[6] Gulliksen also employs this measure. Op. cit., p. 315. On p. 355, however, he mentions only the standard deviation of the weights. On p. 319-20 he refers to positive and negative weights which might average zero, or near zero, thus making the coefficient of variation unstable or infinite.

The second question that was raised concerned the relation between the apparent and the real weighting. That is, series of measures already contain a weighting of their own. They are weighted, when combined into a composite score, or total, in proportion to their standard deviations. The scores that are most widely dispersed have more effect on the placement of an individual in the total than do scores which are bunched together. Such weighting may be referred to as "internal weighting." It is always present, though often overlooked.

Table 13 has been prepared to present data illustrating the various points discussed in this section. The left side of the table represents scores as recorded or used by the instructors; the top half shows illustrative scores on the individual tests, without the application of special weights by the instructor. These sets of scores nevertheless carried their own weighting, measured by their respective standard deviations (as shown in Table 13). The next row of figures,

TABLE 13. ILLUSTRATION OF TWO PROCESSES IN ARRIVING AT WEIGHTED SCORES FOR THE COURSE

Student	Scores Given by Teacher							Recomputed Theoretical Scores							
	As Recorded							As Equalized							
	Q-1	Q-2	MT	LE	F	T	CS	Q-1	Q-2	MT	LE	F	T	CS	Z
1	63	82	43	89	74	351	(70)	41	54	43	239	78	455	(91)	....
2	65	93	86	94	80	418	(83)	42	61	86	253	85	527	(105)	....
3	60	70	78	95	71	404	(81)	38	46	78	256	75	493	(99)	....
4	80	90	83	95	94	442	(88)	52	59	83	256	100	450	(90)	....
. ...	..	..	..	..	..	...	..	..	..	..	...	..	...	..	....
Standard Deviation..	19.66	19.27	12.68	11.96	4.71	9.48	....	12.68	12.68	12.68	12.68	12.68	12.68	....	....
Internal Weights....	1.5	1.5	1.0	0.4	0.9	....	....	1.0	1.0	1.0	1.0	1.0	....	....	....
	As Used for Course Scores							As Computed for Theoretical Scores							
Applied Weights.....	1.0	1.0	2.0	2.0	2.0	....	....	1.0	1.0	2.0	2.0	2.0	....	....	....
1	63	82	86	178	148	557	69.6	41	54	86	478	156	815	102	70.3
2	65	93	172	188	160	678	84.7	42	61	172	506	170	951	118	84.2
3	60	70	156	190	142	618	77.4	38	46	156	512	150	902	113	79.9
4	80	90	166	190	188	714	89.2	52	59	166	512	200	989	124	89.2
. ...	..	..	...	...	...	...	....	..	..	...	...	...	...	...	....
Standard Deviation..	19.66	19.27	25.36	23.92	9.42	9.32	....	12.68	12.68	25.36	25.36	25.36	25.36	...	....
Combined Weights....	1.5	1.5	2.0	0.8	1.8	....	....	1.0	1.0	2.0	2.0	2.0	.....	...	....
Proportional Weights	2	2	2.5	1	2	....	....	1	1	2	2	2	.....	...	....

The various tests have been discussed at length in the text. Q-1 and Q-2 are two short quizzes; MT is the midterm examination; LE is library exercises; F is final examination; T is a sum of all these scores; CS is the course score--a weighted average of the preceding scores (except in upper left quarter of table, where these averages were computed specially for the study but were not derived by the teacher). Because CS for recomputed theoretical scores is in different units from those of CS for teacher scores, in the lower half of the table the former were converted to a comparable scale and designated as Z-values. Combined weights are internal weights multiplied by applied weights.

"Internal Weights," shows numbers having the approximate ratios of the standard deviations, but employing the scores on the midterm examination as a base, or reference value. Those scores are, therefore, given a value of one. (Such numbers are easier to compare than the original standard deviations.)

These internal weights are present in the scores before any selected weights are applied; the applied weights (i.e., those used as coefficients), therefore are in addition to the internal weights. The two kinds of weighting result in "Combined Weights," shown in the row next to the bottom of Table 13, and represent the products of the two sets of weights. These may, in turn, be reduced so that the smallest weight is one, and the others expressed, for convenience, in approximate numbers. These are shown in the bottom row as "Proportional Weights." These are the real weights that the various series of data actually had when combined by the instructors to make up their course scores. Each quiz counted as much in determining the position of a student in the course score as did the final examination; the library exercises counted about half as much as one of the quizzes, and the midterm examination counted most of all. (It should be remarked that, although these were the actual weights which operated, the effect of any weight is modified by the correlation of the set of scores with the total of the remaining sets, so that the weights actually act only upon the unique portion of any single set of measures.)

The lower right-hand portion of Table 13 remains to be discussed. The left-hand side of the table indicates the answer to the question concerning the apparent and the real weights. The applied weights may be considered as the apparent weights; the proportional weights are the real weights. The data in the lower right-hand section of the table illustrate the kind of results that would have been obtained if the apparent weighting had been achieved. To obtain these results, each set of data must first be divided by its standard deviation--or, alternatively, all standard deviations must be equated to some particular one. In the present instance, the standard deviations were made equal to that of the midterm examination. These figures are shown as "Recomputed Theoretical Scores" in the upper right-hand section of Table 13. The internal weights, accordingly, become equal. When, therefore, the applied weights are employed as coefficients for such series of measures, the resulting actual weights are the applied weights--as intended. Thus, the "Proportional Weights" shown in the right half of the bottom row are the same as the applied weights.

The fact that the figures shown in the "Z" column, at the right of the table, are nearly the same as those shown in the "Course Score" column in the left side of the table is due to the influence of the various intercorrelations existing among the five different sets of data. In this connection, it may be interesting to compare the figures in the lower right-hand column with those in the "CS" column in the upper left portion of the table--which are the course scores that would have resulted from adding the five different sets of data without any special weighting at all.

Future practice might be determined in the light of some of these comparisons.

Summary

It has been shown, on the basis of data gathered throughout the course, that students in the two sections were of similar backgrounds of experience and achievement when they entered the course. Through the use of two specially designed tests, and the results of the regular program of testing in the course, it was found that the two groups made gains of a satisfactory nature. The comparisons made, and the similarity of the results indicate that the two methods of teaching of LY 201 are efficient and effective. The fact that there were 50 percent more students in the television section, gives strength to the argument that greater numbers of students can be accommodated through the use of televised lectures.

CHAPTER IV

DEVELOPMENT OF THE COURSE, LY 201--USING BOOKS AND LIBRARIES

> Although school libraries were authorized by law in some states as early as 1835, it was not until the 1930's that they began to make a significant contribution to school programs. Since the 1940's school libraries have placed emphasis upon use as well as upon number of volumes. . . . Special libraries in law, medicine, technology, music, and other subject areas, as well as libraries in special types of institutions are new developments in the twentieth century. . . . The American college library has entered upon a period of growth not only in terms of number of volumes, but even more significantly, in terms of its importance in the college academic program. . . . The college library of today is not a separate institution, but is an integral part of the college; it exists only to help the college carry out its objectives. The method of teaching a subject rather than a textbook has necessitated wide and intensive use of the library. The college library seeks to provide and make easily accessible to the student the materials he needs for class assignments and for voluntary and recreational reading.[1]

Evolution of the Need for a Course

When Rae O. Weimer, Director of the School of Journalism and Communications, came to the University of Florida in 1949, he brought to journalism courses a concept of learning which involved giving what he termed the "open book" examination.[2]

---

[1] Jean Key Gates. Guide to the Use of Books and Libraries. New York: McGraw-Hill Book Co., 1962. pp. 24-25.

[2] Directions to students taken from an "open book" examination: "The following is an open book examination consisting of ten questions, all of which must be answered to complete the exam. Each student is required to do his own work. He is not to discuss the questions with

Students were sent to the library during these "open book" exams, seeking information which was related to these writing assignments. The design was to force the student to look up materials in several sources, such as periodicals, documents, and monographs, in the areas of broadcasting and journalism. "In depth" reporting required the students to do reference work in editorial writing, a search for the background materials which led to the situation being described.

When students went to the library seeking this kind of information, they had little idea what was available or where it might be found. Librarians, in attempting to assist these students, found that in the course of several weeks, they were repeating the steps necessary to show students where to find and how to use materials in the library. This extravagant use of librarian time required that something be done to relieve the strain, something which would do the same job for a larger group of students at the same time.

Director Weimer and assistant director of the Library, Dr. Margaret Knox Goggin, met to work out plans for a course which would do a better job for the students and relieve the burden on the library staff. Materials to be taught, sequences to follow, and examples of exercises to be done in the library grew out of this meeting.

Although the University of Florida, and specifically the University libraries, faced a problem of developing a course to solve problems

---

"fellow students or seek aid from journalism-communications instructors. However, the student may consult all other reference sources--persons, materials, books. Any documented complaint that a student has unfairly monopolized materials, thus penalizing classmates, will be reason for grade penalty."

faced by students in the School of Journalism and Communications, other universities faced similar kinds of problems.

> Approximately 4,000 entering freshmen (at Southern Illinois University) had previously received this [library] instruction by guided tours in groups of 50 and by two lectures in groups of 150 students. This meant that over 100 tours and endlessly repeated lectures were saddled on every available librarian who also had to correct 12,000 papers covering three assignments in the library. The papers, incidentally, were often handed back a month after the assignment was made when the reinforcement would certainly be near zero.[3]

Development of a Course

LY 201--Using Books and Libraries was designed to develop a knowledge of the basic resources available in the University of Florida libraries and in any library which a student might use in the future. The course is based on the premise that a person might ask or be asked certain types of questions, such as, "Who is this person?" "What is the population of this city?" "What do people think of this book?" Lectures are devoted to describing, using many practical examples, the best procedures to be used in answering types of questions generally accepted as being most often asked by students. Certain basic books are discussed for their usefulness in answering these questions. These books are listed on mimeographed sheets for each lecture, the sheets being made available at the beginning of each lecture.

Assignments to be worked out in the library were made to follow each lecture. These assignments were to familiarize students with the materials covered in the lecture. Five questions were given to each student; different questions for each. A series of typical questions was developed. Each question was duplicated not more than eight times. These questions were then "shuffled" in such a way as to prevent students from receiving duplicate assignments. That is to say, each student received five questions, some of which other students also received, but no two students had identical sets of questions. This type of assignment was to become a regular part of the work done by students in this course.

---

[3] Southern Illinois University. "A Study to Determine the Extent to Which Instruction to University Freshmen in the Use of the University Library Can be Turned Over to Teaching Machines." Final Report. Carbondale, Illinois: Southern Illinois University, July 1, 1963. p. 1.

A brief description of each lesson follows:

1. Introduction.--The introductory lecture poses the question, "Why do people need to take a course on how to use libraries?" The means used by libraries to effectively handle materials are explained with illustrations (microphotography, bibliographical control, information storage and retrieval, and cooperative acquisitions). The plan of the course and procedures to be used are outlined.

2. Biography.--Methods of locating biographical data are demonstrated through logical analysis of the known factors, as, for example, person's birth and/or death date, his occupation, his nationality, or his place of residence.

Typical questions answered: What university did my chemistry professor attend? How long was George Washington a general in the United States Army? Did President Kennedy attend Harvard?

3. Book Reviews.--The exact methods used in finding reviews of books are shown by following a student as she proceeds step-by-step, using the following sources: indexes to book reviews, periodical indexes, and indexes to professional journals.

Typical questions answered: Where can I find reviews of Gordon Childe's What Happened in History? Are there sources for reviews of books dealing with high speed photography? Where does one find criticisms written recently about Tolstoi's War and Peace?

4. Bibliography.--A bibliography is defined and various types of bibliographies are presented. Emphasis is placed on the use of national and trade bibliographies, national library catalogs, and the bibliographies of the periodical trade.

Typical questions answered: Who first published this book? Is this book still being published? What is the circulation of the Wall Street Journal?

5. Social Sciences I.--The first of two lessons deals with these areas: Anthropology, Business Administration, Economics, Education, History, Law, Library, Science, Political Science, and Sociology. The types of reference works available in each of the Social Sciences disciplines are shown. Types of questions most frequently asked concern a government (city, state, or country). Typical questions with answers found in gazetteers, atlases, handbooks, and yearbooks are used as illustrations.

Typical questions answered: Where can I find the definition for "Habeas Corpus?" Which states select judges by popular vote? Who is the congressman from my district? In what department of the government is the Peace Corps?

6. Social Sciences II.--The sources of statistical information are shown in this second lesson. World Almanacs, Statistical Abstracts, U. S. Government informational sources, and handbooks are shown. Methods of identifying and locating government publications in all fields are given. Questions regarding information reported in the news media and questions concerning business and industries are briefly explored.

Typical questions answered: How many people died in automobile accidents in the United States in 1937? How many bowling alleys are there in Terre Haute, Indiana? Where can I find a final report on the sinking of the submarine Thresher?

7. Humanities I.--Methods of answering the most frequently asked questions in Language, Art, and Music are illustrated. Discussion of the history and the changing function of the dictionary, including the uses of specialized dictionaries, is shown.

Typical questions answered: What painters are associated with surrealism? How many octaves are there on the keyboard of the novachord? What is the earliest use of the word "newspaper? in the English language?

8. Humanities II.--Emphasis is placed upon procedures for identifying quotations, characters in fiction, plays, short stories, and literary allusions. Literature, Theatre, Philosophy and Religion are the major topics.

Typical questions answered: Where can I find the entire poem containing the line "each man kills the one he loves"? Is "The Croppy Boy" a poem or a play? What has been the attitude of Buddhism toward fasting?

9. Sciences I.--The first of two lessons in materials relating to the sciences shows three guests, a chemist, a metallurgist, and a paleontologist, using methods prevalent in each of their fields.

Typical questions answered: What derivatives are there for the common saponification salts of sodium? What are the stress factors of high carbon steel? Where in the classification of animals does the eagle belong?

10. Sciences II.--The abstracting and indexing services in the sciences are reemphasized with additional examples to show their importance. Specialized publications such as Singer's History of Technology as well as specialized dictionaries and handbooks of the sciences

are also discussed.

Typical questions: This does not apply to this lesson as students were asked to draw up five questions which could be answered by the science references assigned.

11. Guides to the Literature.--Students are introduced to the fact that there is a guide to the literature of most major disciplines. Numerous guides are shown on the screen to illustrate the kinds of information to be found.

Typical questions answered: Where can I find a guide to New York City? How do I determine the best dictionary for use in my particular field? Is there an index to periodicals in the field of mathematics?

12. Summary.--This final lesson reëmphasizes the importance of proper methodology in searching for answers to questions. Proper procedures for library searches are reviewed.

The Course in Use

LY 201--Using Books and Libraries was first offered in the fall semester in the 1956-57 year. Enrollment in the course grew as enrollments grew in the School of Journalism and Communications. From a single section in the beginning, the number of sections increased to three by 1963. The number of students in each section was limited to 35, and more sections were added as it became necessary. More than one librarian became involved in the teaching of the course. Students in other schools and colleges began to enroll in the course, as deans and professors recommended it to students in other areas. It was not long until "probationary" students in all undergraduate programs were required to take it as a means of improving their study habits and their chances of success in the upper division schools.

Since there was a problem of getting enough library staff released to teach LY 201, it became necessary to attempt other solutions to the problem of increasing enrollments. One instructor attempted to teach a double section of 60 students who met in a large classroom for lectures. Even this action could not provide for the number of students wishing to take the course.

The Advent of Trimester Organization

Under the trimester system, which went into effect in the Fall of 1962, the course became even more of a problem to the library staff and to the students. More sections, each larger than the preceding ones, placed additional loads upon the instructors in gathering together materials to take to class as illustrations for the lectures. More and more students were coming to the library to use the same materials in completing their assigned exercises. Even though additional copies of certain titles were purchased, it became necessary to relieve this problem. A partial solution came through the alternating of lectures and consequently, alternating the assignments. The instructors would lecture on different topics during any one week. This did not, however, solve the problem of staff required to teach the sections, nor the size of the larger sections.

In 1960, when the course began its expansion, Dr. Goggin and the Director of Television, Dr. Kenneth Christiansen, met to discuss ideas relating to the preparation of a series of televised lectures for use over the closed-circuit lines at the University.[4] Although funds were not available at that time to produce the series on television, plans were made to develop materials which could be used in the televised series. In 1962, when funds became available, the present writer was assigned to the series as television director.

---

[4] WUFT-TV, the University of Florida television complex, was established at the University in 1957 as a production and a broadcast operation. Subsequently, closed-circuit lines were installed to connect this area located in the Stadium Building, with lecture rooms in McCarty Hall. This established the use of lectures by television as a part of several courses being taught on campus in chemistry, humanities, and mathematics.

Television Planning

Although LY 201 was not the first television course to be designed for use at this University, it was the first known attempt in the United States to present materials pertaining to the use of books and libraries. Plans called for 12 lessons to be produced. It was decided that one of the 12 lessons should be an introduction, in which the student was told what was to come in the series and to give him specific instructions concerning the procedure in the course. It was decided also that the student exercises which were done in the library would continue. The mimeographed sheets containing the titles and authors of reference works would likewise be used. They would, however, be modified by spacing the titles more widely, thus permitting the students to take notes directly on these sheets. It was felt that this would prevent the need for extensive note taking during the televised lecture, and it would provide a framework for the students as they studied these materials at a later date for examination.

At the end of the series, there would be a summarizing lesson. It would point out additional areas which students might like to pursue for their own benefit, and briefly relate all of the previous lessons in a short review. Both this summary lesson and the introduction were prepared at the end of the televising schedule in order to be sure that all materials mentioned and shown were actually a part of the lessons in which they were said to be.

Television Production

To begin the production of the televised series, a setting was needed. In designing a setting for the series, the first question requiring an answer concerned the type of presentation: formal vs. informal. Would the instructor be presented in an office, as a consultant; in a lounge or livingroom as a personal friend; or as a librarian in what appeared to be a corner of the library? While it is true that cost was a factor in the final decision, the major concern of the course instructor was that she be able to actually show the books. It would be easier to create a "setting device" in which the instructor could handle materials, if the setting were to have bookshelves as a part of the design.

The choice was made to create the effect of being in a corner of the library. Two large bookcases, standing at right angles, were used to hold all of the materials of each lesson, arranged on the shelves as they might be found in the library. This proved a simple method of giving the television instructor access to the books and pamphlets as they were needed within each lesson.

In addition to the two bookcases, there was a stand which was built to resemble a rolling table, with shelves located beneath the top. This table provided a surface upon which to display the individual books, and it provided a location behind which the instructor could stand while lecturing. This table took the same position in each lesson, in front of one of the bookcases, so that the instructor stood with the other bookcase at her left hand. A second, smaller table was used occasionally to form the fourth side of the setting since it was necessary, from time-to-time, to use such equipment as microfilm readers or to display large volumes.

Television Production Problems

Lighting for the series remained a constant problem. Once the setting of lights was worked out, lights were placed and notation of their position was made. Thenceforth, the lighting should have been routine. It was not, however, as student crews did not replace lighting instruments in the marked spots nor use the size and style indicated. In some cases, too, the markings were removed, and lights had to be positioned again by trying them to see the effect. The problem of glare from the instructor's glasses provided the need for resetting of lights for each program. This problem of glare might have been eliminated, however, if nonreflecting glasses had been provided for the instructor.

The crew, including the cameramen and the floor managers, were not always the same people. Since it is a part of the function of the School of Journalism and Communications to provide training for students in all phases of television production, it was necessary to accommodate many students in each crew position. This worked considerable hardship on the series, since teaching the camera techniques needed to give good close-ups, and training these students to move rapidly enough to allow using the many visuals was a responsibility of the director. Many times the three-hour period set aside for the production of a lesson passed before the lesson was produced on tape, and the session was carried over until the next period. On some occasions, the finished tape was not of the quality desired, and it was redone. This required still another studio session.

Enlargement of Visuals

WUFT-TV film director, John Thorne, and his assistant were assigned to make the necessary motion picture films and photographs to provide authentic locations or views of books which were needed. These were used to show the students how materials actually looked. In order to permit the kind of close-ups which would fill the television screen, several experiments were tried with enlargements of photographs.

First attempts to enlarge materials involved copying pages by Xerox process from books being discussed. These copies were taken to the television studio where the cameraman would first show the entire page of the material and then, using the same lens, move his camera closer to the page, refocusing as he went, until the section of the page which it was important to see, filled the screen. This action is far easier to describe than it is to do! In the many hours of trials with student cameramen, it was not possible to count on a single sequence. This unreliable technique was discarded.

A second effort was made involving two cameras. The first would, as in the first attempt, show the entire page as it had been copied. Then, the second camera would be preset in a close-up on that portion of a second copy of the page which required enlargement. Simply by switching to the second camera, the director could move the viewer closer to the page. But this, too, involved problems. Unless superenlargements of the small segment of the page were made, the second camera was constantly moving from full page copies to small areas of other pages as each camera had to perform many tasks in the showing of visuals. This led to the development of a sequence which was later adopted and which made for good reading of the material on the television screen. The page to be shown was first microfilmed in order to get a good quality negative from which to make a very big enlargement. An 8" x 10" enlargement was made showing the small portion of the page which was to be read. This approximates an enlargement of 50 diameters, thus requiring very fine film indeed.

A second copy of the page was made by Xerox process and was mounted on chipboard for ease of handling. Thus, the sequence as it developed, followed a regular pattern. When the lecturer began to discuss a new title, she would reach into the appropriate bookcase and withdraw the book. At the moment when her eyes dropped to read the spine on the cover, the camera having the close-up of this photograph was switched on the line. As soon as the instructor indicated that she was reading from the page within the book, the entire page, from the Xerox copy, was shown. Then, at the moment that the viewer was expected to be reading from a certain portion of the page, the superenlargement was shown so that he might actually read the passage. Considerable time was spent in the development of this technique so that LY 201 students could read the materials, and so that the series could be produced with student crews.

Final Production Procedure

The number of people involved in the preparation of each lesson was usually the same. One or two photographers took and processed the film and photographs. The art department mounted finished photographs and Xerox copies on chipboard. Charts and other artistic renditions were also rpovided by the art department.

The student studio crew included three cameramen, their camera floor assistants, and a floor manager. An audio man, serving also as announcer, was in the control booth. It was his responsibility to place the microphones and to select audio from the studio or a tape recorder at the correct time.

The student assistant director made notes during the rehearsals of changes needed, kept track of time within the lesson, and coached cameras into position so that they would be ready when called for.

Engineers shaded the cameras and ran the video-tape recorders. All of these people, along with the instructor and her library resource staff and the television director, are known as the television team. It takes many people to put together a television lecture, and it takes time.

Rehearsal-Production Time

There were several changes in the time set aside for the production of this television series. At first, meetings to plan the lessons took place during the normal working hours of both the instructor and the director. Time for rehearsals in the studio, however, was made available during daytime or evenings. The series started using the afternoon hours in the studio. Later, rehearsals moved to mornings. Finally, because of the difficulty of getting the student crew during the daytime, rehearsals and production moved to evenings. This meant that the instructor and the director carried out their regular daytime activities, from which they had not been released, and then spent evenings producing the television series. This had an advantage, however, of permitting extension of the three-hour rehearsal period, as there were no station commitments after the 10:00 PM ending time. This advantage was used many times to prevent having to do at another session, a lecture which did not "gel" until late in the evening.

The Pilot Television Lesson

To test the techniques developed for showing the special materials, a pilot lesson was produced. This lesson was taken from the script prepared in the area of bibliography so that many kinds of materials from one reference room in the library could be used. Many film sequences were taken by the film crew to show the sets of volumes as they appear on the shelves in the library. These were to be used in the lecture as illustrations, but technical difficulties in the film projection equipment prevented their successful use. As a last resort, photographs were substituted, and many of the actual volumes were taken to the studio for inclusion in the lesson. (This pilot lesson was not actually used in the teaching of the course, and, as a matter of fact, was one of the lectures repeated several times to get an acceptable recording.)

The pilot lesson was reviewed by eight students who were given a written quiz following their viewing session. On the basis of this preview, several changes were made in presentation techniques, all of a minor nature. Of the eight students, four had taken LY 201 as a "live" lecture, and four had no previous library course work. This proved to be an interesting fact, for those who had taken the course thought the lesson had been produced in the library itself--an illusion it was hoped could be created. No formal presentation of the pilot quiz will be made as it generates little of interest in the overall study.

The pilot lesson was also used to provide the library staff an opportunity to observe the method of presentation, and to learn what the television medium could do to improve the impact of visualizing the materials. The television instructor found this lesson useful in seeing herself as she appeared to her students.

Television Production Schedule

Production of the series began in June of 1963. Plans called for the taping of one lesson each week for the following 12 weeks. By the end of the first week it was apparent that the schedule could not be met. There were too many things to coordinate. Photographs had to be taken and developed. Art work had to be ordered and produced, and scripts had to be worked out and checked for technical feasibility. Art orders required a week's advanced notice, and photography even longer. By very careful planning, it was then thought that production might be scheduled to finish two lessons per month.

The movement of books and other library materials from the library to the studio, however, presented another obstacle. After student assistants in the library had gathered these materials together, a truck was scheduled through the Plants and Grounds Department to bring them to the studio. This proved too expensive and the time of arrival too unreliable. Private transportation was, therefore, arranged. Many times the television instructor took materials in her own car. At other times, the materials were picked up by the student crew, in the director's station wagon, before television production began. It took a full hour to get the materials arranged properly in the bookcases after they reached the studio.

Some of the 12 lessons were not completed by January of 1964, when the series was started over the closed-circuit. They were completed as rapidly as possible, however, and work progressed at a faster pace as the series neared completion. All lessons were ready to meet the commitments for their use.

Although the series was used during the spring trimester of 1964, only a cursory examination was made of the resulting student achievement. Data for the present study came from the third term's use during the fall trimester of 1964.

Summary

The course, LY 201--Using Books and Libraries, was originally developed to meet the needs of students in the School of Journalism and Communications and to relieve the strain on library staff members of answering innumerable questions by students. It sought to do for groups of students what had scantily been done for individuals.

Common needs and goals were the basis upon which content was developed. Reinforcement and enlargement upon lectures was sought by assigning exercises in the use of materials under study. These exercises provided an individualized effort during the practical "experience" phase of the course.

Increased enrollments and, with the advent of the trimester system, shorter teaching terms, necessitated the use of different lecture methods. Either larger groups of students must be taught at one time or more library staff members must devote time to teaching this course. The use of televised lectures offered an opportunity to reach larger numbers of students while relieving the strain on the library staff, and to enrich the visual impact in presenting materials.

The course was redesigned and produced as a series of 12 lectures given on television. The planning, production, and use of these lessons is discussed in the present chapter in some detail, emphasizing the personal approach by the teacher, the method of permitting the viewer to see and to read from materials presented, the use of library exercises, and discussion held during class meetings.

It is against this background that the present study was undertaken.

CHAPTER V

SOME CONSIDERATIONS OF RECENT THEORY WHICH RELATE TO THE DEVELOPMENT OF THE COURSE, LY 201

Classroom instruction faces the conflicts growing out of diversity of purposes. The teacher seeks to instruct in common cultural goals, at the same time giving due attention to individual differences and individual student needs.

The instructors seek to develop new ways of getting materials across to students effectively. Good teachers actively seek new methods of teaching. It is a process which never seems to end. Getzels writes,

> In response to the recent demand for 'new kinds of teaching' two lines of instructional innovation seem to be developing. One line attempts to foster inquiry, discovery, and creative thinking in the classroom by revising the materials and teaching methods of specific subjects taught. The other attempts to institute courses in inquiry, discovery, and creative thinking as such.[1]

How a teacher teaches and what is taught, then, depends on his concept of learning and his concept of the function of the school. These concepts are in a constant state of modification.

Broudy, Smith, and Burnett point out that "It is true that many of the elements of current curriculum thought and practices are highly defensible, but it is also obvious that the total curriculum scene evidences serious shortcomings."[2] In writing about conceptions of schooling, the authors discuss two prominent viewpoints.

---

[1] Jacob W. Getzels. "Creative Thinking, Problem-Solving, and Instruction." Theories of Learning and Instruction. Sixty-Third Yearbook, Part 1, National Society for the Study of Education. Chicago: University of Chicago Press, 1964. pp. 240-67.

The first, which was developed just after the turn of the century, is the Connectionist Theory. Edward L. Thorndike assumed that ". . . for each learning, there was a corresponding connection or chain of connections in the nervous system. . . . each connection relates a specific stimulus to a specific response." "According to this view, school learnings and the uses of such learnings are specific and coterminous. To be useful, school learnings needed to be those which are expected to be faced in later life." The subject matter is reduced to atomistic bits of information.

The second theory, that of the pragmatist, is based upon the viewpoint that learning is situational. That is, individuals learn by thinking their way through situations for which they have no ready-made way of behaving. Curricula generate schooling of maximum utility when learnings are those which activities of life will demand. In keeping with this view, classroom situations will be made as comparable as possible to situations actually to be encountered in life.[3]

Broudy, Smith, and Burnett, however, sharply contrast this point of view with their own proposal which calls for the "one-to-one correspondence between school learnings and the uses of schooling only in the replicative sense of use. . . . the school earnings pertain primarily to the domain of skills and specific factual information. In applicative and interpretive uses, it is assumed that the cognitive structures which are built up are so comprehensive as to subsume a greater number of situations and experiences . . . thus, the mastery of basic concepts and intellectual operations, together with mastery of the symbolic skills, promises a high degree of utility as one interprets and deals with his world."[4]

---

[2] Harry S. Broudy, B. Othanel Smith, and Joe R. Burnett. Democracy and Excellence in American Education: A Study in Curriculum Theory. Chicago: Rand McNally and Co., 1964. p. 11.

[3] Ibid., pp. 75-77.

Bruner states that ". . . the problem of transfer is central to all education." Further, transfer may be either positive or negative. "It is hoped that whatever is taught in school is somehow used in the individual's later life."[5]

How a teacher presents material will determine the kind and amount of transfer which takes place. "Learning which involves a meaningful organization of experience and response can be transposed or transferred with greater facility than learning acquired by rote. Transfer takes place only if there is some aid both in abstracting and applying the principles and in developing the method and 'set' for so doing. . . . And he (the student) needs practice in applying these principles."[6]

In considering what makes up the curriculum and how it serves its function, one must think of how organization into categories, and the method of instruction, bring about change in the student, which is learning. "One problem in today's curriculum is that of obsolescence of

---

[4] Broudy, Smith, and Burnett, op. cit., p. 79.

[5] Jerome S. Bruner. The Process of Education. Cambridge, Massachusetts: Harvard University Press, 1960. p. 11.

[6] Hilda Taba. Curriculum Development Theory and Practice. New York: Harcourt, Brace and World, 1962. p. 126.

"curriculum content . . . . the unprecedented explosion of knowledge and with it technological explosion unlike any the world has seen." This is coupled with the fact that "each area of knowledge . . . has at least two main characteristics: it has its own fund of acquired information and a specialized method of inquiry, or a strategy of acquiring that knowledge."[7]

It is the acquisition of this fund of information and the understanding of these methods that is the primary objective of every student. How best to give the fund of information and the understanding of the methods to the student, then, is the primary concern of every teacher.

Bruner states that "the curriculum of a subject should be determined by the most fundamental understanding that can be achieved of the underlying principles that give structure to that subject. . . . The best way to create interest in a subject is to render it worth knowing, which means to make the knowledge gained usable in one's thinking beyond the situation in which the learning has occurred."[8] "Grasping the structure of a subject is understanding it in a way that permits many other things to be related to it meaningfully. To learn structure, in short, is to learn how things are related."[9]

Inherent in most new curriculum studies is the idea that students should make discoveries for themselves by following prescribed procedures. Blackwood states, "The question is no longer whether we should stress 'process of learning' over learning subject matter. Now we move ahead placing emphasis on pupils' process of thinking and learning in various subjects and problem areas, knowing that growth of content knowledge will follow richly in the wake of inquiry."[10]

---

[7] Taba, op. cit., p. 184.

[8] Bruner, op. cit., p. 31.

[9] Ibid., p. 7.

In some cases discovery means the learner is left completely to his own devices. The only direction is that which is in the situation itself. In the opposite extreme the learner is given as complete direction as possible so that he will inevitably make the discovery. Between these two extremes lie many methods of teaching by discovery.

Taba,[11] Ausubel,[12] and Kersh[13] agree with the idea that making discoveries for himself is important. However, some disagreement concerns the degree to which the learner is "sophisticated" enough to learn. Other points of disagreement concern: (a) whether the discovery method is appropriate for all children, (b) the time involved to assure that each learner makes his own discoveries, and (c) the uniqueness of the learner himself. There has not been enough definitive research on this type of learning either to embrace it or to repel it entirely.

Broudy, Smith, and Burnett point out, however, "the school must

---

[10] Paul Blackwood. "Science Education." Educational Leadership 19: 267-76; January 1962.

[11] Hilda Taba. "Learning by Discovery: Psychological and Educational Rationale." Elementary School Journal 63: 306-16; March 1963.

[12] David P. Ausubel. "Learning by Discovery: Rationale and Mystique." National Association of Secondary-School Principals Bulletin 45: 18-58; December 1961.

[13] Bert Y. Kersh. "The Motivating Effect of Learning by Directed Discovery." Journal of Educational Psychology 53: 65-71; April 1962.

. . . be judged by how well it achieves the outcomes that make it a distinctive social institution. . . . The multiplicity of subjects is of course, due in part to the increase in knowledge that has come about during the last hundred years. But it can be attributed even more to the fact that a conception of the uses of schooling that assumes specific and direct uses of school learnings in life situations leads logically to the conclusion that whatever is needed in life must somehow be taught directly in the school."[14]

This approach does not conform to theirs, for they hold that "there is in a rough sense a hierarchy of knowledge such that some concepts and principles explain far more than other concepts and principles, and, in some cases, the less powerful concepts and principles can be derived from the more powerful ones. The subjects which embrace the most generally explanatory concepts and principles are the ones which are basic to any education."[15]

When a student meets the teacher in quest of information and method, interaction between the two takes place. This interaction seems essential to a successful learning situation. It has been suggested that interaction involves a two-way process of communication. Usually this two-way process involves a teacher and students but it may also exist among students and between students and resource people.[16]

---

[14] Broudy, Smith, and Burnett, op. cit., p. 43.

[15] Ibid., pp. 81-83.

[16] National Education Association Division of Audio-Visual Instructional Service. Interaction in Learning: Implications for Television. Report of a seminar held at NEA headquarters. Prepared by Mrs. Finette P. Foshay. Washington, D. C.: the Association, 1959. p. 11 ff.

Interaction between student and teacher has become strained under the handicap of larger and larger classes. Teachers continue to seek methods of teaching which permit this interaction and yet reduce the fatigue brought about by the exessive drain upon them, when they are personally involved with the student interactions.

Educators constantly search for new methods of teaching, and better ways to use present methods. Many take pride in their attempts to utilize the latest media developments as aids in their classrooms.

Student Ferment on University Campuses

Two ideas, in seeming conflict, face today's college students. On the one hand, they are expected to develop self-reliance, independence, and initiative. To this end, certain work is assigned to be done without professorial direction. On the other hand, students find that they are expected to participate as members of a group, work toward common goals, conform to standard patterns, and be rated on uniform examinations.

Newspaper headlines reflect the feeling of frustration and abandonment which university students throughout the country are expressing. The problem of "creeping impersonality" arises from overwhelming enrollments and the consequent use of computers to maintain records for students who are met for instruction in groups of increasing size, sometimes approaching 2,000. "Frequently the full professor doing the lecturing does not even know his assistants by name. There is an incipient revolt of the undergraduate students against the faculty. The students want to be treated as distinct individuals. . . . After a decade of apathy, of concern for and commitment to civil rights and peace movements, and the emergence of a new radical left . . . educators are becoming increasingly concerned with the changing characteristics of undergraduate life, the bigness and the intense pressure for grades."[17]

At Yale, St. John's University, Harvard, and throughout the country, the situation of unrest demands action. "Reform is long overdue." says psychologist Nevitt Sanford, head of Stanford's Institute for the Study of Human Problems. "Teachers try to upgrade themselves, the same way departments and colleges do, by making their courses tougher and tougher. The result is that the student is enormously overburdened with meaningless work, with endless reading lists, with an incredible array of abstract concepts, with papers and reports that are absolutely punitive. The poor graduate student is even worse off. We've made the rewards of getting a Ph.D. so attractive, that we can raise the hurdles as fiendishly high as we like, and the poor chap will keep jumping."[18]

Undergraduates are losing ground. The universities are finding that their student bodies are made up more of graduate students than undergraduates. Students who are fortunate enough to have some direct contact with professors, and who have learned through this close association to like them, to feel that these professors are interested in them personally, revolt when universities fail to grant these professors tenure. Student newspapers carry stories of rallies held to protest firings.

---

[17] Tampa Tribune, May 23, 1965. p. 1.

[18] Ibid., p. 1.

The University of Florida student newspaper, after months of debate, even after official statements as to reasons for dismissal, carried stories of rallies to protest the firing of an instructor in the Humanities.[19]

Students are expressing their protests in rallies and in riots. In some universities, students drop out after a term or two of class work, yet remain in the vicinity of the university where they take active parts in protest movements. Although not actually enrolled, they express student unrest and resentment.

---

[19] Florida Alligator, Vol. 57, No. 142, May 12, 1965. p. 1.

Evaluation of the Course, LY 201--Using Books and Libraries

The evaluation of the course, LY 201--Using Books and Libraries, as it has been undertaken in this study, does not end with the statistical treatment. What is important are the relationships which have been found to exist within the development of the course, and its subsequent uses; those parts which will have an effect upon the campus climate and upon the individual student.

At the University of Florida, where problems of computerized record keeping and large-group teaching methods present to the student an increasingly impersonal treatment, an attempt has been made to circumvent problem areas through the use of sound curriculum theory and with a constant awareness of the most recent theories about learning.

A close look at development of the course has shown that it was a joint effort of the library staff and the staff of the School of Journalism and Communications. Although such joint planning is highly desirable, even necessary, it sometimes does not come about in courses which cut across areas of special interest. Time, and an already overburdened staff may make such an effort at cooperation too great a sacrifice for faculty members who plan and develop courses.

LY 201 was designed as a means of upgrading curriculum and the method of teaching to conform to practices which it was felt would do a better job. The need for doing something was quite evident. The handling of students within the library, on an individual basis was not realistic. The University population increases demanded an approach which could accommodate enlarged enrollments.

It has been pointed out that LY 201 was planned early in the period of increased University enrollments. This has made it possible to prepare a course and try it out with students, using conventional lecturing methods and thus, provide a basis for later comparison with other modes of teaching. Teaching this new course with a personal lecture delivered by the instructor in the classroom has made it possible to determine through actual experience, what areas contained problems and what demonstrations did not make sufficient impact on the student.

The use of devices to project the materials which were being shown left little doubt that this approach was unsatisfactory. Although seeing the materials was thought to be an important part of learning about them, such methods of demonstration left much to be desired. As with any instruction which seeks to create a more positive learning situation, it has been necessary to seek better methods which permit seeing and relating the demonstrated materials to the lecture.

Some orientation, and direction, are basic to understanding the use of the library. Economy of time, both for the student, and for the staff of the library made it imperative that directions be given. The introduction of students to certain basic reference materials was handled as a large-group lecture.

In addition to the lecture, which contained the pertinent information concerning materials, there were the mimeographed sheets which contained the list of materials being discussed. Special effort was made to accommodate students by providing space between citations of material in which students might take notes which were important to them. The design here was to make it possible for a student to keep facts related to any single piece of material in the same place so that in reviewing, he would not have to consult several sources. This was not the end of it, however. Individual student's needs were recognized and were accommodated through the discussion of the lectures and through the exercises performed in the library.

These library exercises also made it possible to enhance transfer of information by providing applications for materials discussed in the lectures. Greater familiarity with the individual reference works brought about better understanding of the reasons and the methods for using them.

None of the course required rote memory. The meaningful organization of the course, and the division of the materials into manageable segments, permitted the student to acquire a structure within which he could relate the kinds of materials available in each area and a rationale for using them.

Since theories of learning are converging toward recognition of experience, desire, and need, it might be well to emphasize the fact that this course was taught with an awareness of the previous experience of the individual student, and motivating factors which prompted both the development of the course and the reasons for his taking it. It will be recalled that there are large numbers of students who come to the course with neither experience in library work nor in taking courses by television. An entire lecture is devoted to familiarizing students with problems which are faced in a library. Specialized methods of storage and retrieval demand that a student be aware of them and that he realize that development of these methods was to make it easier for him to obtain the information he sought from within the library.

Discovery of interesting and necessary new phases of methods and materials of the library were individual undertakings. Each student, as a result of his enrollment in a particular school or college, faced somewhat different needs. Materials which might be of primary interest to him might not be of interest in the same degree to a student enrolled in another area. Both students did, however, receive the same basic introduction to these materials from the lectures. Where greater interest, or need, was the motivating factor, enlargement upon the framework developed within the lecture took place as an individual response.

Throughout the course, emphasis was placed on the thinking process. When similarities existed in ways of organizing or handling materials, these similarities were pointed out. This reinforcement was designed to assist the transfer of framework or organization into other areas. In a similar manner, the phrasing of questions and the type of activity assigned as exercises to be done in the library helped to make desirable transfer take place.

Overburdened faculty members, while seeking to relieve the strain of their own commitments, cannot escape the responsibility they have to provide students with reasonable learning conditions. It is important, also, that they, as university personnel, maintain as close and as open a relationship with the students as possible. Constantly increasing enrollments do, however, make this a very difficult undertaking.

In the case of LY 201, a successful method of maintaining personal contact came about in three ways. It came first in the discussion periods at which time the students and the instructor interacted in a very personal way. This instructor made it a point to learn and to use each student's name every time he was addressed. The second way was by maintaining the continuity of the personality of the instructor; having the television instructor and the discussion leader be the same person.

It is important to remember that television can provide a very personal approach through close-up views and through "eye contact." It makes little difference how large the viewing audience is if each viewer can see well what is being demonstrated, and if each viewer can realize the one-to-one relationship which is created between him and the instructor. Whether he sits alone or in the center of a large group need not affect his relationship with the television instructor.

The third method of maintaining a personal approach was that used in marking and returning materials which students turned in. It was always considered important to get these materials back to the students at the next class meeting. Written comments and corrections helped to create a feeling that the instructor was interested in each student as a person. Although it must be fairly stated that it was sometimes a graduate assistant who made these comments, the student was not aware that it was not the instructor who did so.

Limitations

The development of the course, LY 201, did not resolve all of the problems of library usage which a student may encounter. It was not designed to do so. Such a design transcends a single term and calls upon specialized knowledge which students must acquire in several courses.

Even so, limitations appear within this course which demand recognition. Students who take this course expect, and should find, no obstacles to successful completion.

It should be anticipated that there will be some student absences. Such is the nature of students that from time to time they will be unable to attend class. What is done to permit their receiving the work thus missed? It is difficult to see why a student must be penalized for missing a televised lecture until one realizes the expense in time and equipment which is involved in reshowing a lecture.

At the University of Florida, closed-circuit television lectures emanate from the stadium building where the educational television station is located. In addition to sending out this single video taped program, the engineers may also be involved with programs being broadcast to home or public school viewers, and at the same time sending a third program by microwave to the educational station in Jacksonville. They may well be involved in the production and taping of another program which is taking place in the studios. There is a limit, both of equipment and manpower, which prevents repetition of a single lecture.

Another limitation is imposed through the use of televised lectures. Immediate questioning of the lecturer is not possible. Time spent in the writing of a question to be asked later in the discussion period may cause the student to miss something related to his question. This same effect, however, might be said to be a problem where very large groups of students receive lectures by professors in their presence. The number of questions to be asked, and answered, may well prevent handling them all.

Students, as yet, have no way of knowing which section will be taught by television. They will, therefore, not be permitted to exercise their own judgment as to which method of teaching best suits their own needs. Where there is some justification for having to be taught in one way or the other, some indication of which section receives which kind of lectures will be important. Perhaps, too, it may be necessary to provide for many sections in each kind of instruction. This might result from increased demand for the course by students. It is apparent that enrollment in the course will continue to increase. Since so many schools and colleges seem to be represented in the present enrollment, it is reasonable that more sections will soon be required on the basis of numbers alone.

It would be hoped that the alternative of permitting the size of the television section to increase would not come about. Such an action would defeat many of the advantages of the present section size.

Provision for updating.--Revision of the course, whether presented as a lecture by a professor in the classroom, or by television, is expected. There is an advantage within the video taped series which may not be apparent at first glance. Unless the revision involves more than a single lesson, it is not necessary to do again any but the lecture which is involved. The content of the other lessons remains constant and invariable so that one can count on it always being the same. This is important if the lectures have been prepared well, because it precludes something being omitted in the stress of time.

> In a postliterate world, the individual . . . will need to be able to organize knowledge in both verbal and nonverbal systems. He will need to be able to sort and order information for his own purposes. Only through participating in all such processes throughout his education will the individual today be able to unify continuously within himself the knowledge gained through both oral and written modes of transmission. This is the total lifelong process to which McLuhan directs our attention.[31]

---

[31] Alice Miel. "Knowledge and the Curriculum." New Insights and the Curriculum. 1963 Yearbook. Washington, D. C.: Association for Supervision and Curriculum Development, National Education Association, 1963. p. 103.

There is a special set of objectives which grow out of the nature of the course. Because a knowledge of the library, its books, and its organization should make more readily available to the student the wealth of ideas in the published materials, acquiring this knowledge should open doors for his further growth. Thus, an increasing awareness of the rich treasure of recorded knowledge and humanistic productions becomes in itself a basic goal of the library study. LY 201 has dignified reasons for being. It is a road to the discovery of new ideas by way of processes and fundamentals.

LY 201 was designed to teach the methods of use and to develop judgments on the part of students in the selection of the best sources for reference material. Its goal was not merely knowledge with which to pass an examination. It emphasized doing, interacting, gaining experience. It was building students' larger personality patterns in independence--building judgments.

By assigning materials to be sought in the library, the independence of a student became reinforced as he found and used these materials. Taking these experiences back to the classroom, he was able to participate fully in the discussion of them. He then became an informed part of the organized society of the University, a working part of it.

Briefly, the course was designed to help the student. It had specific objectives. By meeting the needs of students as they were recognized by the staff of the School of Journalism and the library, this course was in a real sense designed for the student. It should help him become a vital part of an organized society as it exists at the

University. It should help him develop respect for the organization of the library and for organized effort to make the materials of the library available to him. It should help him become independent in the use of the library--here at the University or at any place where he should desire to work in a library.

CHAPTER VI

CONCLUSIONS AND RECOMMENDATIONS

Previous studies which compared conventional teaching with television teaching have reported no significant differences in the two methods. There was no expectation of appreciable differences between the two methods of this study, as a result of this previous finding.

In each of the specially constructed tests, that is, the two tests used for the Social Sciences and the Humanities lectures, there were rather large differences found. While these tests were designed to measure the knowledge gained through a single lecture, they do not represent the total testing program of the course. The tests did, however, contribute to the study a measure of assurance that the television teaching method was efficient and effective.

The data presented from the regular testing program confirmed the fact that the two methods of teaching provided opportunities for comparable achievement, and that the students who experienced the lectures given by television were able to accomplish the end goals of the course, as measured by these tests.

The loss of three meetings by the television section leaves as unanswered the question as to whether these students might have been able to make more significant gains if they had received the benefit of these three meetings. As was pointed out, the loss of three meetings by closing of the University, and giving two full class meetings to the testing program of the course, materially diminished the time remaining for instruction. Sandwiching the quizzes, and the special tests, into a very crowded schedule should be considered an additional limitation imposed upon the students in the television section. It is quite remarkable, therefore, that the students in the television section were able to maintain a comparable level of achievement.

The performance of the exercises assigned to be done in the library appeared to have contributed to the learning of the students. It may well be the factor which tended to equalize the gains made in the lesson on Humanities. At least, it would be difficult to discount this possibility. They did, however, contribute little to the influence of final scores as was pointed out in the study.

In the determination of the effect of weights upon the final grades received by students, it was pointed out that the student's relative standing was not affected by the application of these weighting factors. Indeed, the weights which were used, exerted a different influence than was originally anticipated; to wit, the midterm examination became the most influential grade used in computing final course averages.

On the basis of the data presented, it has been shown that the students made equivalent gains in both sections. Since more students appeared in the television section, it is then possible to accommodate more students by the use of television lectures without decreasing the learning of students. Time spent by instructors in the preparation of lessons for this course, was materially shortened through the use of previously recorded televised lessons.

Recommendations

A related study should be undertaken to determine the conceptual relationship which students think exists between a television teacher and the student. It is important in this time of increasing impersonalization at the university level of study to use all means available to give the student a sense of worthiness both in membership and in recognition of his effort.

As yet, this televised series has not been used in a situation where the television lecturer was not also the discussion leader. A study of the effectiveness of these television lectures without the presence of this person might indicate some serious lack of personal involvement by students taking such a course.

Administrative variations in the use of the televised series might include:

1. Trying two lectures during a class period with discussion held during the next class meeting.
2. Having the 30-minute lecture first, followed by discussion.
3. One period weekly for discussion, and the following period a 30-minute lecture and a quiz.
4. Offering the course for two hours' credit, with a full period each week for discussion in addition to the regular lecturing period.
5. Offering the course for two hours' credit, giving the lecture and discussion one period and assigning the exercises that period; and having a second period for discussion of problems encountered in carrying out the library exercises.

Presentation variations might also be attempted. They might include:

1. Substituting a lesson of similar material but which used a great deal of film made in the library to show actual location of the materials being cited.
2. Substituting a color filmed sequence for one of the regular lessons, using the same materials and the same method of presentation as in the television lesson.
3. Substitute a lesson made using remote television equipment in the actual room of the library where the materials for that lesson are stored.
4. Substitute another instructor, using the same materials and techniques used in the regular lesson.

Additional variation might be attempted in the area of the content of a particular lesson. This might involve a completely different approach to the subject, or might use all close-ups of the materials with narration by the instructor who did not appear on the screen. It might also be interesting to do one of the lessons without any close-up materials to study the comparative effectiveness.

APPENDIX

PERSONAL DATA FORM

LY 201--USING BOOKS AND LIBRARIES

NAME:

HOME TOWN:

HIGH SCHOOL ATTENDED:

OTHER COLLEGE ATTENDED:

YEAR AT UNIVERSITY OF FLORIDA AND MAJOR FIELD OF STUDY:

PLANS FOR CAREER:

DID YOU TAKE C-3 AT UNIVERSITY OF FLORIDA?

DO YOU PLAN TO TAKE GRADUATE WORK?

Sample questions from the special test for Social Sciences I

Where could you find listed, the duties of the Florida Citrus Commission?

_____Facts on File
_____Florida Handbook
_____Book of the States
_____All of the above

Where do you look for population figures, and basic facts about Japan's agriculture and education?

_____Historical Atlas
_____Statesman's Yearbook
_____Encyclopedia of Social Sciences
_____Public Affairs Information Service Bulletin

Where could you find brief facts about causes and events of the Fries Rebellion in 1799, in Pennsylvania?

_____Encyclopedia of Social Sciences
_____Facts on File
_____Dictionary of American History
_____Commager's Documents of American History

Sample questions from the special test for Humanities II

Where could you locate two books containing the poem, "Twas the Night Before Christmas"?

_____Granger's Index to Poetry
_____The Oxford Companion to American Literature
_____Bartlett's Familiar Quotations
_____Poetry Explication

What was the place of the witch doctor in early superstitious rites?

_____The Reader's Encyclopedia
_____Encyclopedia of Religion and Ethics
_____Oxford English Dictionary
_____Essay and General Literature Index

In which Italian play is Lucio Settalo a character?

_____The Reader's Encyclopedia
_____The Oxford Companion to English Literature
_____Essay and General Literature Index
_____Oxford English Dictionary

BIBLIOGRAPHY

Asheim, Lester. "A Survey of Informed Opinion." Educational Television: The Next Ten Years. Wilbur Schramm, editor. Stanford, California: Institute for Communication Research, 1962. 375 pp.

Ausubel, David P. "Learning by Discovery: Rationale and Mystique." National Association of Secondary-School Principals Bulletin 45: 18-58; December 1961.

Blackwood, Paul. "Science Education." Educational Leadership 19: 267-76; January 1962.

Broudy, Harry S.; Smith, B. Othanel; and Burnett, Joe R. Democracy and Excellence in American Education. A Study in Curriculum Theory. Chicago: Rand McNally and Co., 1964. 302 pp.

Brown, James W.; Lewis, Richard B.; and Harcleroad, Fred F. A-V Instruction Materials and Methods. Second Edition. New York: McGraw-Hill Book Co., 1964. 592 pp.

Bruner, Jerome S. The Process of Education. Cambridge, Massachusetts: Harvard University Press, 1960. 97 pp.

Diamond, Robert M., editor. A Guide to Instructional Television. New York: McGraw-Hill Book Co., 1964. 304 pp.

Federal Communications Commission. Broadcast Primer. INF Bulletin No. 2-B. Washington, D. C.: The Commission, 1951. 25 pp.

Florida Alligator. Vol. 57, No. 142, May 12, 1965. p. 1.

Gates, Jean Key. Guide to the Use of Books and Libraries. New York: McGraw-Hill Book Co., 1962. 230 pp.

Getzels, Jacob W. "Creative Thinking, Problem-Solving, and Instruction." Theories of Learning and Instruction. Sixty-Third Yearbook, Part I, National Society for the Study of Education. Chicago: University of Chicago Press, 1964. pp. 240-67.

Gulliksen, Harold. Theory of Mental Tests. New York: John Wiley and Sons, 1950. 486 pp.

Hoban, C. F. "Hope and Fulfillment in Educational Television Research." Audio-Visual Communications Review 6: 165-71; Summer 1958.

Holmes, Presley D., Jr. Television Research in the Teaching-Learning Process. Detroit: Wayne State University, 1959. 152 pp.

Kersh, Bert Y. "The Motivating Effect of Learning by Directed Discovery." Journal of Educational Psychology 53: 65-71; April 1962.

Kumata, Hideya. An Inventory of Instructional Television Research. Ann Arbor, Michigan: Educational Television and Radio Center, 1956. 152 pp.

Miel, Alice. "Knowledge and the Curriculum." New Insights and the Curriculum. 1963 Yearbook. Washington, D. C.: Association for Supervision and Curriculum Development, National Education Association, 1963. Chapter 4, 328 pp.

National Education Association Division of Audio-Visual Instructional Service. Interaction in Learning: Implications for Television. Report of a seminar held at NEA headquarters. Prepared by Mrs. Finette P. Foshay. Washington, D. C.: the Association, 1959. 64 pp.

National Educational Television and Radio Center. Current Developments in Educational Television. Washington, D. C.: the Center, 1961. 26 pp.

North Central Association of Colleges and Secondary Schools, Subcommittee on Television of the Commission on Research and Service. The Uses of Television in Education. Chicago: the Association, March 1961.

Scates, Douglas E., and Noffsinger, Forest R. "Factors Which Determine the Effectiveness of Weighting." Journal of Educational Research 24: 280-85; November 1931.

Schramm, Wilbur. "What We Know About Learning from Instructional Television." Educational Television: The Next Ten Years. Stanford, California: Institute for Communication Research, 1962. 375 pp.

Southern Illinois University. "A Study to Determine the Extent to Which Instruction to University Freshmen in the Use of the University Library Can be Turned Over to Teaching Machines." Final Report. Carbondale, Illinois: Southern Illinois University, July 1, 1963. 46 pp.

Taba, Hilda. Curriculum Development Theory and Practice. New York: Harcourt, Brace and World, 1962. 529 pp.

Taba, Hilda. "Learning by Discovery: Psychological and Educational Rationale." Elementary School Journal 63: 306-16; March 1963.

Tampa Tribune. May 23, 1965. p. 1.

VITA

Thomas James Moffett was born in Utica, New York, on March 15, 1923. He attended public schools in the Utica area, and went to Colgate University until he enlisted in the Navy.

During World War II, he served at bases in the eastern United States and in the Pacific Theater. Commissioned an Ensign in January, 1945, at Northwestern University Midshipman's School, at Chicago, he was later promoted in 1949 to Lt. (jg) and in 1951 to Lt. He is active in reserve officers' schools.

Returning to inactive duty in 1946, he attended Indiana University and earned the BS in Education in 1948, and MS in Education in 1951.

He taught Mathematics in the New Albany, Indiana, Junior High School, 1948-51. He taught Chemistry and Physics, and was the first Dean of Boys at the Winter Park, Florida, High School, 1951-54. In 1954 he was appointed principal of an emergency elementary school at the Orlando Air Force Base. Two years later he was transferred as principal of the Concord Park Elementary School, and two years later, to the Rock Lake Elementary School adjacent to the Orange County School Board offices.

During his principalships, he worked at night as a television engineer at WDBO-TV in Orlando for a period of more than three years. He holds the FCC First Class Commercial Radio Telephone License. Returning to full-time study at the University of Florida in June 1961, he worked as producer-director and facilities manager of WUFT-TV, the educational television station at the University, and held the rank of instructor in the School of Journalism and Communications.

During 1963-64 he was a graduate teaching assistant in the secondary education department, supervising the field experiences of intern teachers. In January he was appointed interim instructor in this department.

In September 1964 he was appointed closed-circuit television coordinator for the College of Education with academic rank of instructor.

Mr. Moffett is a member of Phi Delta Kappa, and has served as chapter vice president, member of the board of directors, and delegate to the International Biennial Council. He is a member of the National Association of Educational Broadcasters, and the American Radio Relay League.

Mr. Moffett married the former Mary-Louise Middleton in 1945. He is the father of a son and two daughters.

This dissertation was prepared under the direction of the chairman of the candidate's supervisory committee and has been approved by all members of that committee. It was submitted to the Dean of the College of Education and to the Graduate Council, and was approved as partial fulfillment of the requirements for the degree of Doctor of Education.

Kimball Wiles
Dean, College of Education

Dean, Graduate School

Supervisory Committee:

Douglas E. Scates
Chairman

[illegible] A. Cate

Margaret Knox Goggin

Kenneth A. Christiansen

Hal G. Lewis

Myron Cunningham